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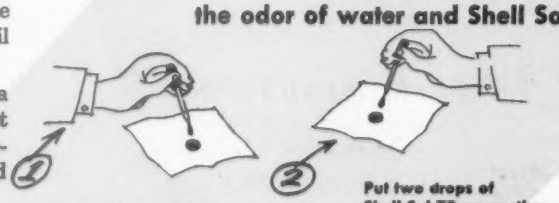

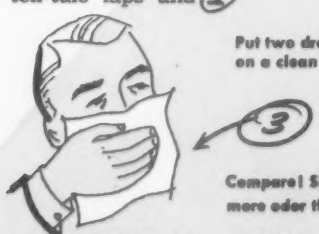

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The "Do It Yourself" Market

A VERY significant development in house decorating is the "do-it-yourself" trend. Undoubtedly, increased prices, higher labor costs, and the lower value of the dollar have had a lot to do with this trend. Another factor which may be attributed to the growth of "do-it-yourself" is the desire of many to relieve the enormous tensions of modern living through creative effort.

In recognition of this market, the paint industry has taken the initiative in developing paint products that have widely won the acceptance of the consumer. Among these are the popular latex finishes and odorless, flat-wall paints.

Recent surveys conducted by leading home magazines reveal that from 70 to 90 percent of their readers do at least some of their own interior painting, with the family kitchen the most often self-painted room in the house.

It has been estimated that interior paints already account for more than a quarter of the paint industry's billion dollars of sales annually. Latex paints have grabbed off an increasingly larger share of the interiors market each year. In 1950, some 10 million of latex paints were sold. The following year, sales jumped up to 21 million gallons, and it is expected that the consumption of latex paint in 1952 will be about 40 million gallons. Today, these paints represent about 15 percent of all trade sales in the paint industry, and their phenomenal growth is primarily due to amateur painters, many of whom are housewives.

At the recent National Association Convention in Chicago, a part of the Trade Sales Manufacturers Forum was devoted to the "do-it-yourself" market. In this connection, Bernhard Mautz, of the Mautz Paint Company, discussed how his firm is "cashing in" on the theme "Paint it Yourself and Save Money" in that it has helped to increase sales not only amongst the home owner, but also increased work for the contractor where a home owner did not want to do the job.

However, the "do-it-yourself" trend poses a problem that paint manufacturers must cope with; and this is concerned with the lack of proper information on the part of dealers and consumers as to the proper application and uses of new paint products. This is especially true of latex paints. It is believed that by a proper educational program to both dealer and consumer this problem could be easily eliminated.

Improved Lacquers Needed

ONE of the most interesting and fruitful features of the recent National Paint, Varnish and Lacquer Association Convention was the lacquer panel sponsored by the Industrial Product Finishes Steering Committee.

Upon completion of the panel discussion, which dealt with new uses and requirements of lacquer materials, it was apparent that the lacquer industry as a whole must step up its research program to meet the needs of present-day users of lacquer coatings.

To cite an example: James W. Halley, of the Research and Development Dept., Inland Steel Co., pointed out that between 1940 and 1950, the use of steel for containers more than doubled, and there are occasions when it is necessary to protect the inside of the container from whatever was stored in it and to protect the outside from corrosion. It is in this one place that the steel industry feels the lacquer manufacturer can be of the greatest assistance.

Another observation which Mr. Halley passed along was the fact that there are a lot of things to be done that cannot be imagined in steel containers, simply because the protective coatings are not completely satisfactory, and concluded with the remark that the broadening use of sheet steels is dependent on coatings that will protect them better.

Similarly, Mr. B. E. Clatworthy, who represented the furniture finishing industry, discussed the major problems with lacquer finishes. These are the proper appliction and the techniques and the processing of fillers, how to control lacquer shrinkages, and how to control pinholing and air bubbles.

There is no doubt that lacquer manufacturers are familiar with some of the above problems. Many have already initiated research programs which will assure industry that some of the vexing problems which it faces in its finishing operations will be solved.

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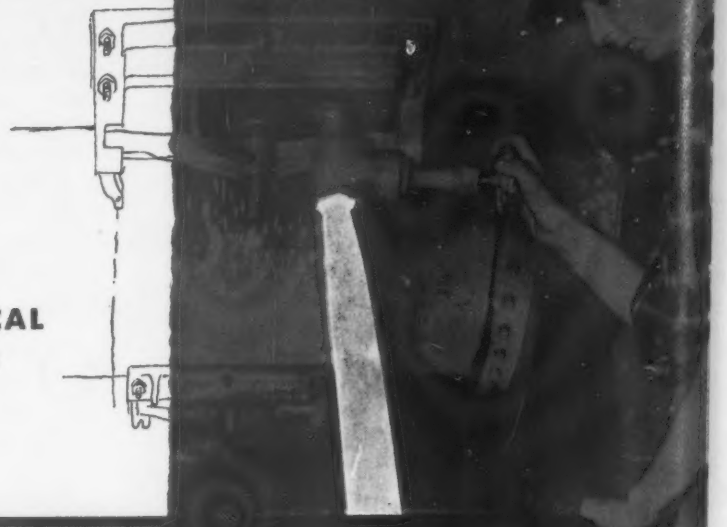

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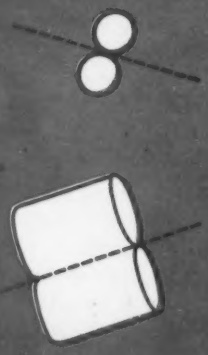

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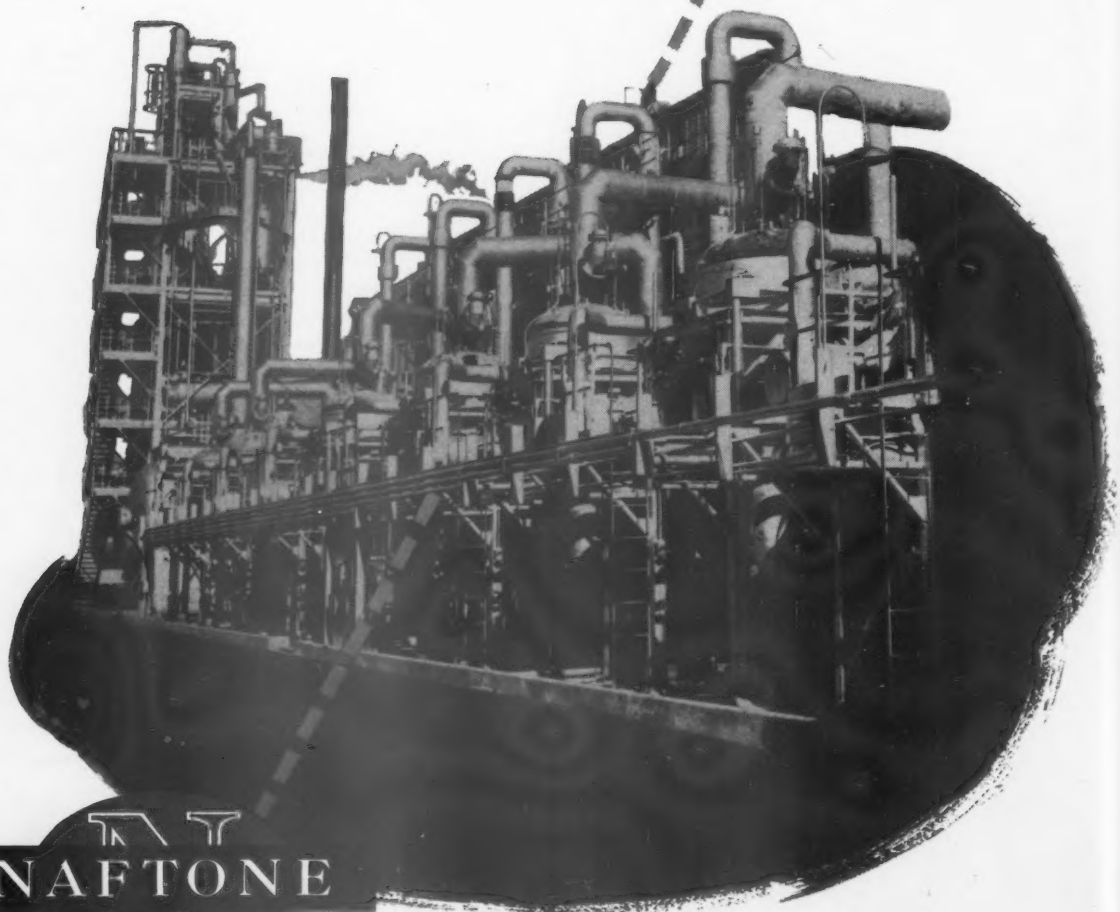

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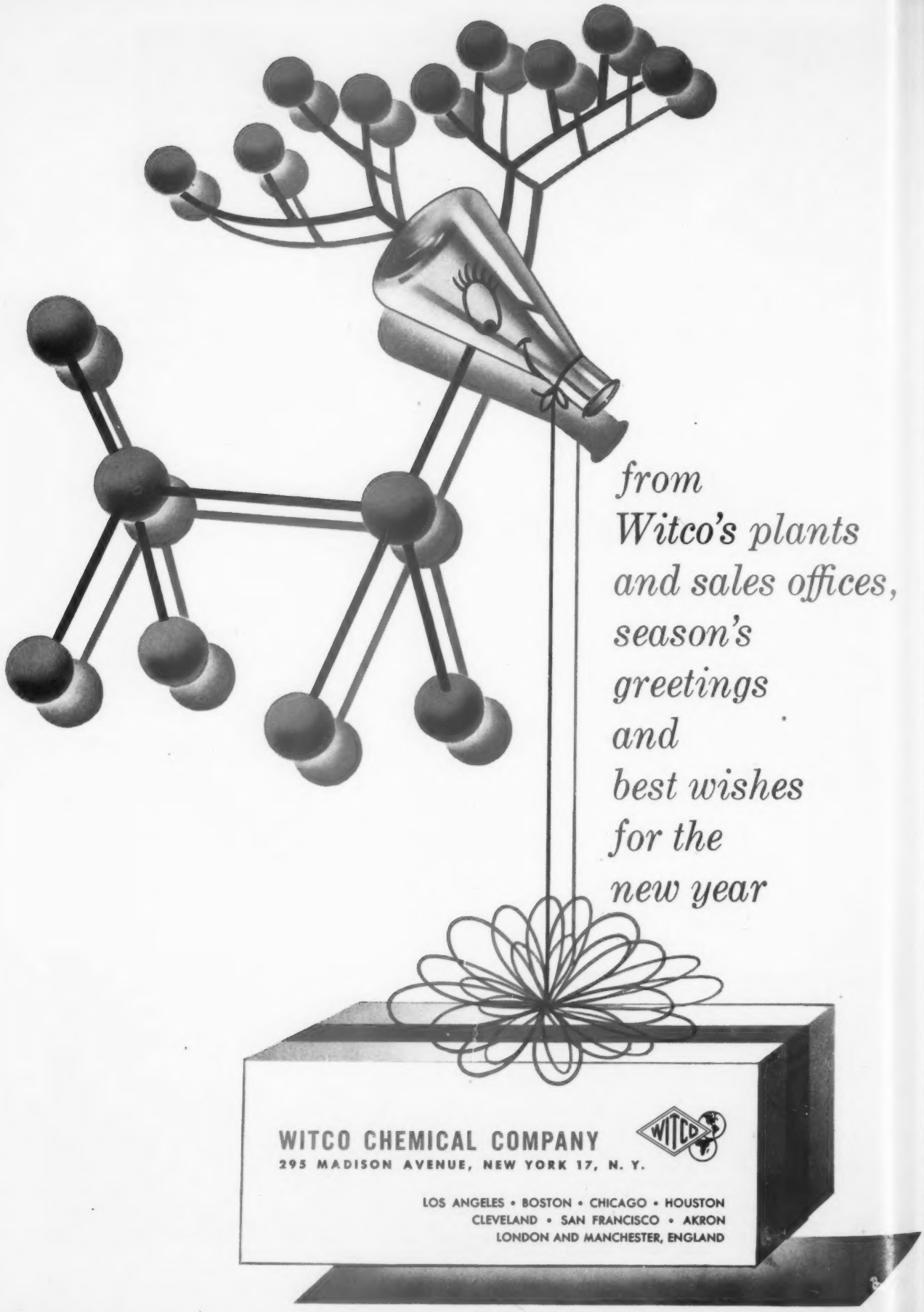
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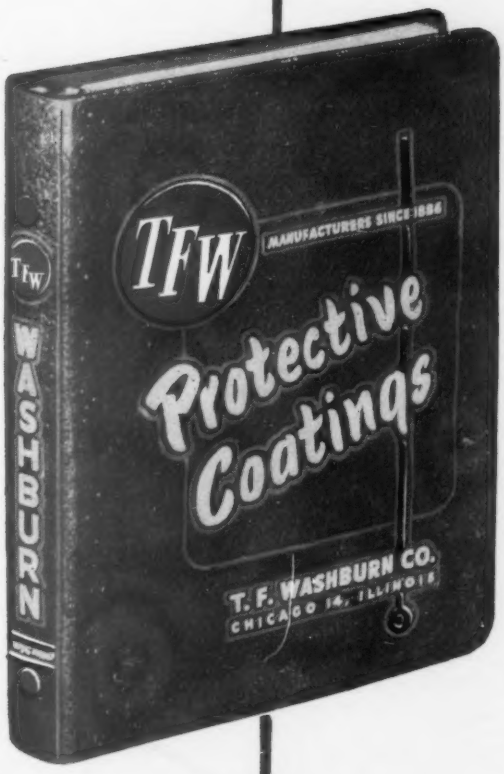

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Methods For Comparative Evaluation Of Paint Bonding

METAL PHOSPHATE PRE-TREATMENTS ON STEEL

By MAX KRONSTEIN, LOUIS F. DeLONG
and ALFRED W. NORMAN
College of Engineering, New York Univ.

Laboratory size pressure spray chamber (Fig. 1).

Methods are studied for the comparative evaluation of paint bonding metal phosphate pre-treatments. Hereby four different phosphate treatments, two zinc phosphates and two iron phosphates are applied as paint bonding bases for OD enamel TT-E-485b in three different film-thicknesses and for a gilsonite test coating which is applied in two different ranges of film-thickness.

The surfaces obtained from the four pre-treatments are compared with the surface of the untreated steel, using the Brush Analyzer. The stripping weights are determined using a hydrochloric acid-formaldehyde solution. The coated panels are compared by the combined application of salt-fog exposure and electrographic printing as described by this group in earlier papers. (Ind. & Eng. Chem. 42, 1568 (1950).)

The results are presented in the form of permanent records of the printing and in the visual appearance of the panels at the end of the exposure. They indicate that the two groups; ie, the zinc and iron phosphates, have no common stripping weight standard. Each group has its own coating effect as expressed in the stripping weight value and in its behavior as an effective paint bonding base. The paint bonding effect is seen as related to the degree of water-insolubilization produced during the application of the different phosphate treatments. This factor is currently being investigated.

MORE and more the industry recognizes the importance of suitable pre-treatment of steel surfaces before the application of organic coatings. In the case of heavy steel structures, sand-or grit-blasting is the most successful technique of surface preparation. Of importance there is the relation between the newly produced profile depth and the film-thickness of the subsequent organic coating system (1). In the case of sheet metal, however, where the profile depth of the steel surface is very low, the most common form of pretreatment is the application of chemical, surface-conversion treatments such as metal phosphate pre-treatments. These are classified usually as zinc phosphate coatings or iron phosphate coatings. Each of these might exist in a number of modifications with other metals.

In a recent study (2) of the paint-bonding characteristics of steel having eleven different types of phosphate pre-treatments, the results showed great variations. This study was carried out by applying the organic film of a given thickness (2.5 to 3.0 mil) on metal-phosphate pretreated steel panels and exposing the panels in the salt-fog chamber during a 3100-hour exposure test. It appeared to be of basic interest, therefore, to study further the various factors to be considered in the matter of paint-bonding phosphate pre-treatments on steel.

This paper was presented in the Division of Paint, Varnish and Plastics Chemistry; American Chemical Society Atlantic City Meeting, September 1952.

Experimental Approach

In order to study the paint-bonding effect of various groups of treatments, the following approach was chosen:

A group of four pre-treatments was selected; two of them being commercial zinc phosphates and two of them commercial iron phosphates. Their phosphate concentration is given in Table 1. In the test work all panels were marked by code using the letters A,B,C and D. Since all records are marked in this manner it is most suitable to use the same grouping in this discussion. In Table 1 these groups and the manner of application are further identified. The Table shows that A and D are two types of iron phosphates and that B and C are two different zinc phosphates. The variation in the concentration of the solutions which were used was necessary in order to follow the suggestions for application of the various manufacturers of the different products. Likewise, a difference in the temperature of some of the solutions occurred. Otherwise the same manner of application was followed for all the pre-treatments.

Table I

Phosphate Concentration of the Pre-treatment Solutions Used.

Pre-treatment Designation	Concentration
A	170 grams in 4 gallons water.
B	316 grams and 24 grams NaOH in 4 gallons water.
C	454 grams in 4 gallons water.
D	170 grams in 4 gallons water.

Footnote: A bare steel panel was exposed in the solutions for 2 hours.

Table I

The stripping weight of the four pre-treatments was determined using a stripping solution consisting of 2 parts concentrated hydrochloric acid with 1 part formaldehyde solution 36%. (In work which is now in progress a chromic acid solution is also being used and the results are being compared.) From comparing the stripping weights of a number of control tests it is evident that the stripping weights of the zinc phosphates are generally considerably higher in milligram-per-square-foot than those of the iron phosphates. The values for the zinc phosphates were close to the present specifications which require around 150 milligram-per-square-foot. For the iron phosphates there are no specifications for the required stripping weight. The two types which were selected for the present study were chosen because, in earlier studies, they showed especially interesting differences in their stripping weight, one being twice the value of the other.

In Table 1 it was noted that each of the freshly prepared phosphate solutions was kept in contact with a bare steel panel for two hours before application. This was done because earlier tests had shown that this produces more uniform coating effects. The reason for this can be seen in the incorporation of a certain amount of water-soluble iron products which participate in the coating process.

The coating of the automotive-steel test panels was carried out with a laboratory size pressure-spray chamber having controlled spray pressure, facilities for heating the solutions to a desired temperature and for circulating the solution between this water tank and the spray chamber. The inside of this chamber is illuminated to enable the process of application to be observed. (Figure 1)

Comparative profile studies were made on the various groups of pre-treatments. This was done with the Brush Surface Analyzer, Model BL-103 (Brush Development Company), which produces a record, in chart form, of the effect of a stylus moving over various areas of the test panels. No scraping off of the pre-treatment was observed as a result of this stylus movement. Table 3 gives the interpretation of the charts in their relation to the profile tested. In comparing the profile of the steel before treatment (Figure 2) with the four profiles after application of the four types of phosphate pre-treatments (Figures 3, 4, 5, 6.) it is evident that the profiles of the various groups vary widely in uniformity. Treatment A (Figure 3) shows little variation on the test points. But this occurred only when the phosphate solution had been enriched with soluble iron matter. Without that, it produced a less uniform coating. The addition of soluble iron matter in the solutions of B and C did not have the same effect on the profiles. The attempt was made to incorporate water-soluble zinc matter in the same manner in the freshly prepared zinc phosphate solution, but no similar effect was obtained. Of interest is the comparison of the profiles from treatments C and D because these two materials have similar profiles but extremely great

Figure 2
Bare Steel Panel

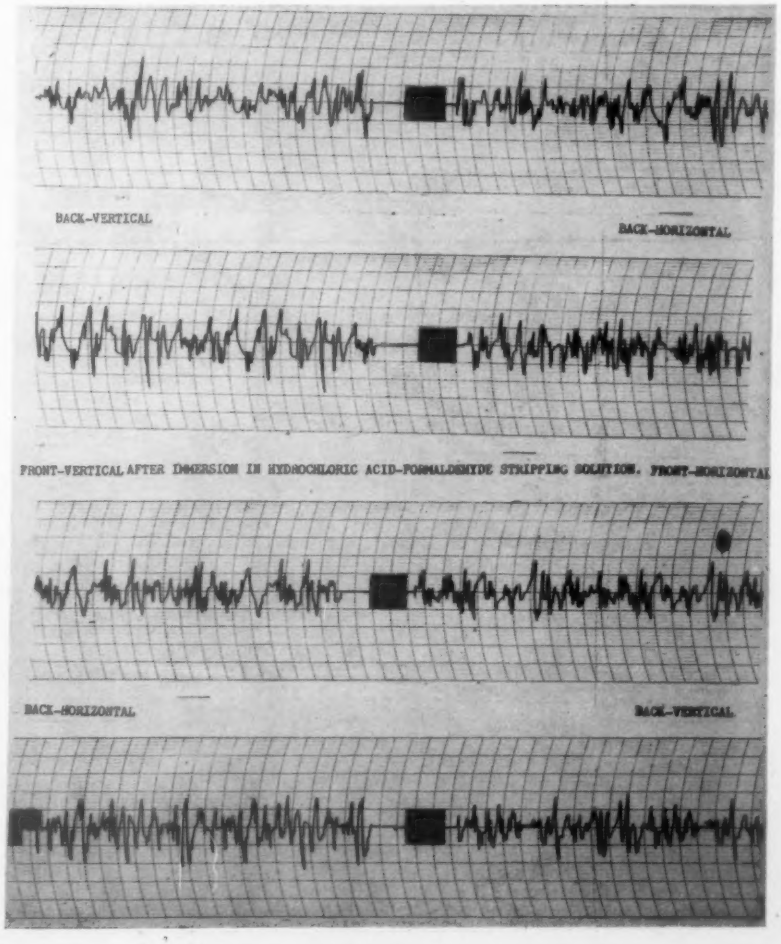


Figure 3. Treatment A — Iron Phosphate I

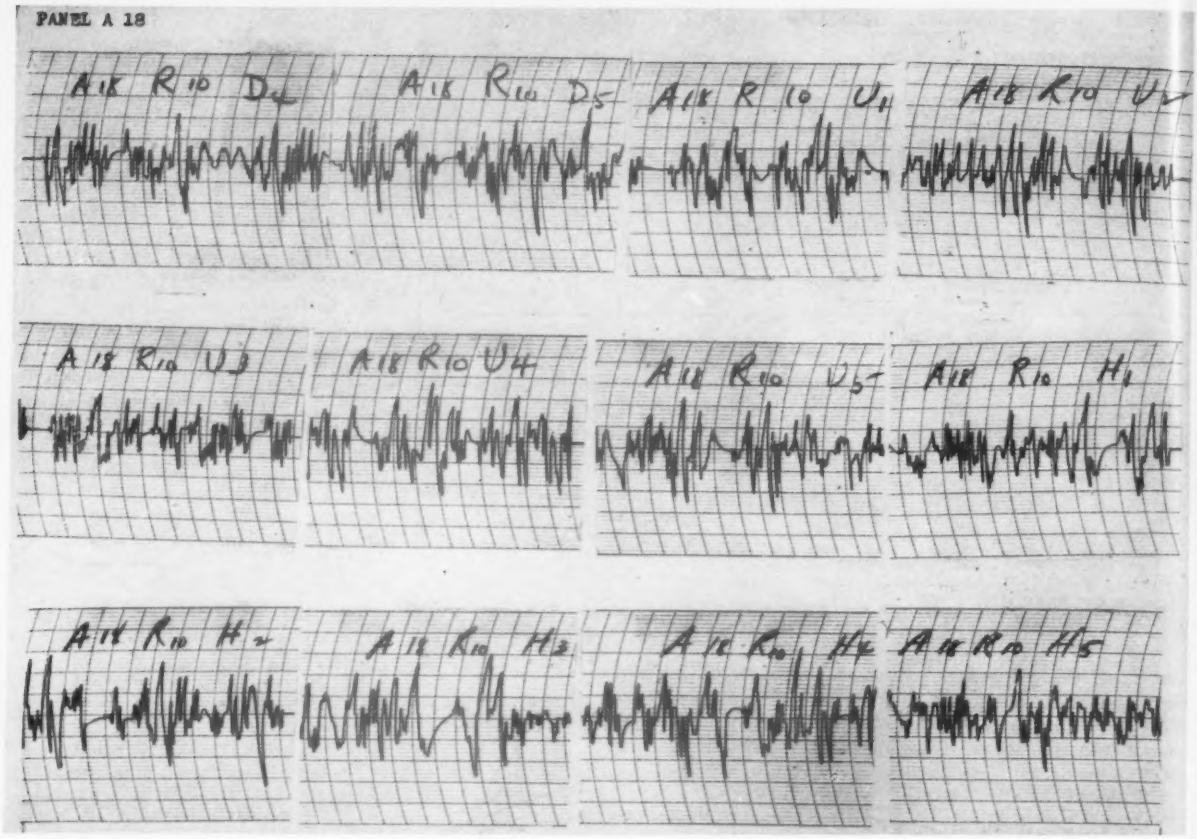


Table II

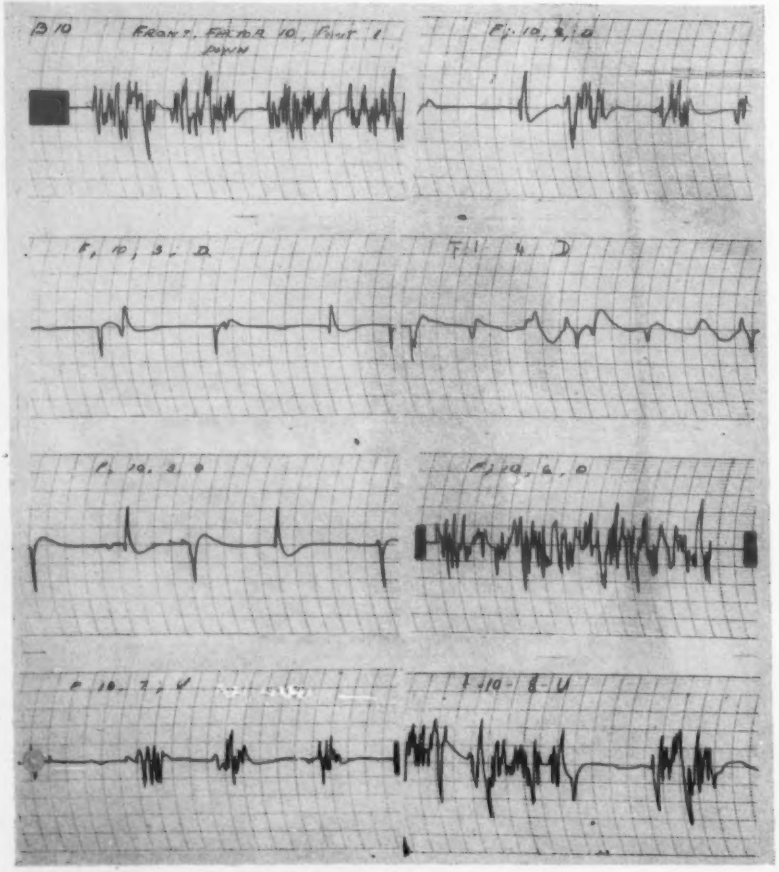
Table II

Application of Four Metal Phosphate Pre-treatments on Steel

Designation	Classification	Spray Application	Rinse	Stripping Weight
A	Iron phosphate I	2″ spray (1″ each side) 10 psi/170°F.	30 seconds water. 30 seconds chromic rinse at 185°F. pH 4.	68 mg./sq. ft.
B	Zinc phosphate I	2″ spray. (1″ each side) 9 psi/130-135°F.	30 seconds water. 30 seconds chromic rinse at 166°F. pH 4.	147 mg./sq. ft.
C	Zinc phosphate II	2″ spray. (1 min. each side) 9 psi/160°F.	30 seconds water. 30 seconds chromic rinse 174°F. pH 4-5.	160 mg./sq. ft.
D	Iron phosphate II	2″ spray (1 min. each side) 9 psi/160°F.	30 seconds water. 30 seconds chromic rinse 177°F. pH 4-5.	34 mg./sq. ft.

Footnote: All the steel panels were cleaned with xylene before the phosphate pre-treatment.

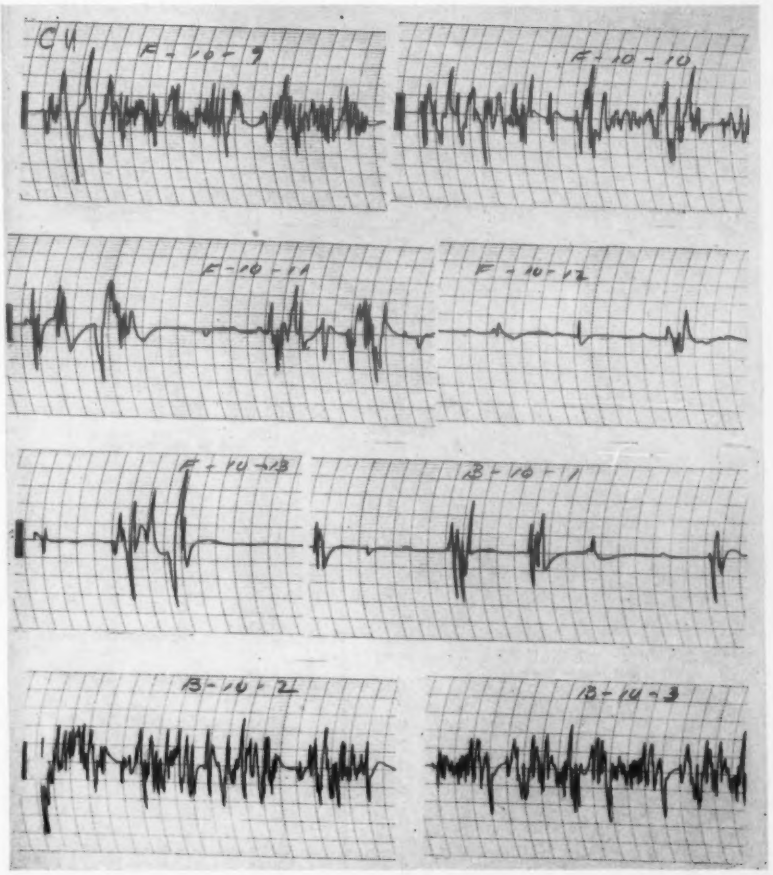
Figure 4



Treatment B — Zinc Phosphate I

Profile taken at different points on front of test panel.

Figure 5



Treatment C — Zinc Phosphate II

Profile taken at different points on test panels — front and back.

Table III

Interpretation of the Instrument Factors

Factor	Distance represented by smallest division on chart.
1	1 x 10^{-6} inches or 0.000001 inch.
10	10 x 10^{-6} inches or 0.00001 inch.
100	100 x 10^{-6} inches or 0.0001 inch.

Note: By use of the instrument Factor, an estimate of the heights and depths of the peaks and valleys on the charts may be made.

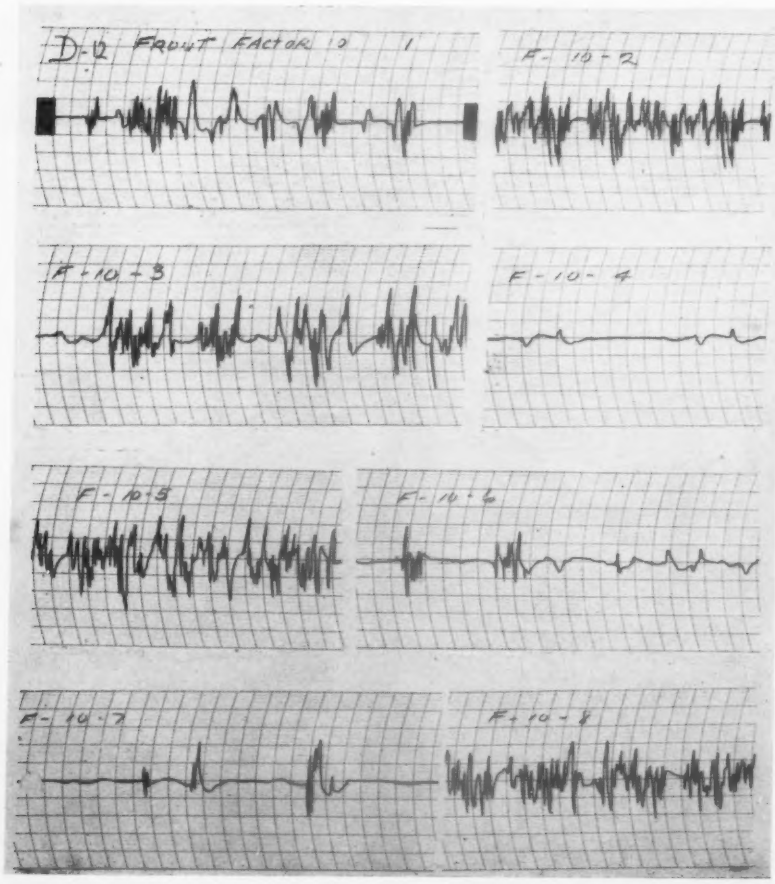
The paper speed was at 5 mm. per second in all tests. This fact can be used to estimate the distance between the peaks and valleys on the charts.

Table III

differences in the coating weight, which is 4 to 5 times greater for C than for D. It must be assumed that in both cases the phosphate coating matter is filling out the valleys in the profile in a similar manner but that the produced coating is nevertheless widely different in weight as well as in efficiency, as will be shown subsequently. The chemical reason for this is presently under investigation.

The attempt has been made to correlate the profiles and stripping weights with the amount of an organic coating material which might adhere to the peaks and valleys. But up to this time no relationship has been established. In the tests, which are still continuing, a paint of controlled viscosity was applied by inserting the pretreated panels (32 square inches in area) in the paint and removing the panels at constant speed with a Fisher-Payne dip-coater. After drying the panels under identical drying conditions, the weight changes were determined using an analytical balance. The results have indicated that it would be necessary to use a much larger test area to determine any differences which might exist. Nevertheless, the profile conditions seem to have some relation to the spreading of moisture from a test-cross in salt-fog exposure as will be shown later in this paper.

Figure 6. Treatment D — Iron Phosphate II
Profile taken at different points on test panel.



Evaluation of the Paint-Bonding

The paint-bonding characteristics of the different pre-treatments was tested in the following manner:

OD Enamel conforming to Federal Specification TT-E-485b was applied on the pre-treated panels in three different film-thicknesses. Also a gilsonite test varnish was applied on other pre-treated panels in two different film-thicknesses. These two test paints were used because they differ widely in their characteristics as coating materials, the OD enamel being a more permanent coating material, the gilsonite solution being primarily a temporary test material.

A. The Tests with the OD Enamel: After the application of an organic coating the paint-bonding pre-treatment becomes a part of a complex protective coating system, consisting of the base-metal, the inorganic phosphate coating, and the organic paint. Since the base metal used in these tests all the same kind of automotive, cold rolled steel, and since the organic coating was the same OD Enamel TT-E-485b, the variables which remained were the four different pre-treatments and the thickness of the organic paint.

The Army specifications (57-0-2C and JAN-C-490) for the testing of pre-treatments allow a relatively wide margin in the thickness of the organic film which is applied. In the present tests, wide variations in the film-thickness of the organic coating have been avoided by producing a large number of test specimens and then selecting those in the three film-thickness groups having the closest correlation in film-thickness. In this manner the panels used in the selected three groups of OD coating thickness did not vary more than 0.14 to 0.19 mil. The range covered by the three groups was 0.61 mil. to 1.50 mil. This supplements the earlier test work using coating thickness of between 2.5 and 3.0 mil. This greater differentiation was made because it was felt that the paint-bonding qualities will ultimately fail as a joint result of the

(*Text continues on page 27*)

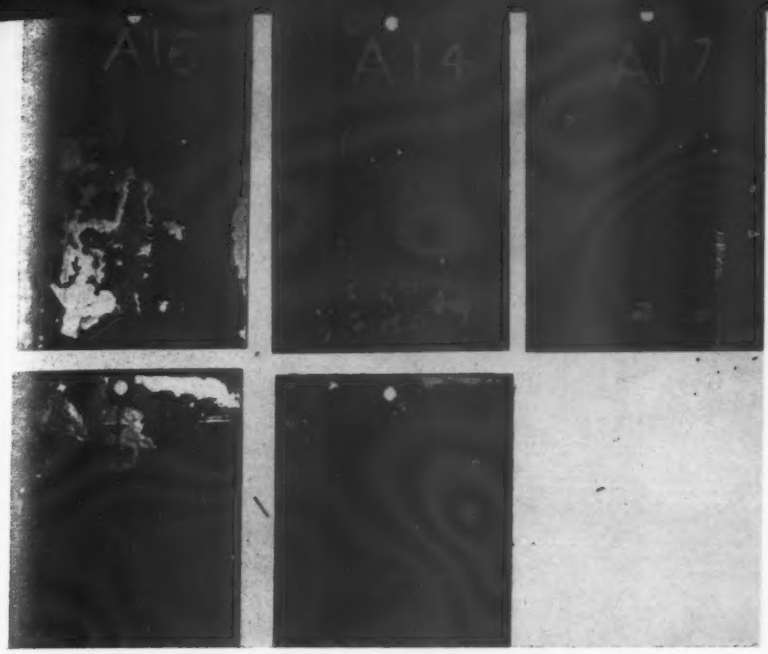


Figure 7

Treatment A — Iron Phosphate I

Stripping weight: 68 mg sq. ft.
Coated with OD Paint TT-E-485B
Paint Thickness: A 2 — 1.14 mil.
A16 — 0.78 mil.
A 3 — 1.14 mil.
A13 — 0.80 mil.
A17 — 0.85 mil.
After 1220 hours salt fog exposure

A 2 (middle panel ,2nd row)

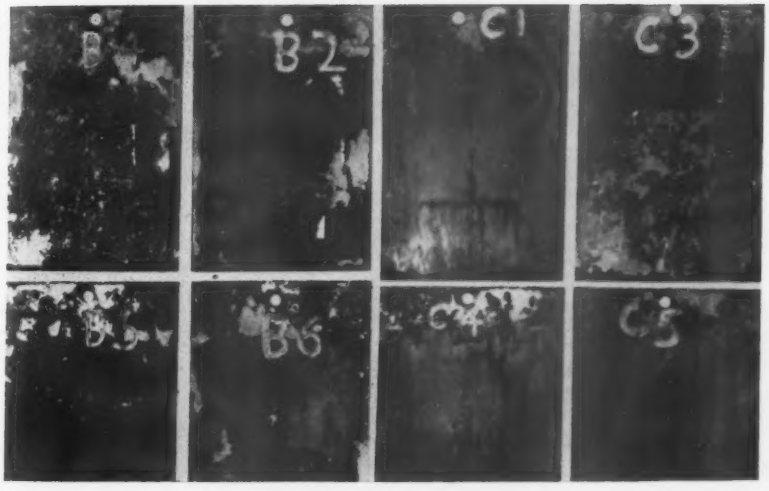


Figure 8 (B Series)

Treatment B — Zinc Phosphate I

Stripping weight: 147 mg sq. ft.

Coated with OD Paint TT-E-485B
Paint Thickness: B 2 — 0.95 mil.
B 5 — 0.64 mil.
B 4 — 0.69 mil.
B 6 — 1.05 mil.
After 1220 hours salt fog exposure

Figure 9 (C Series)

Treatment C — Zinc Phosphate II

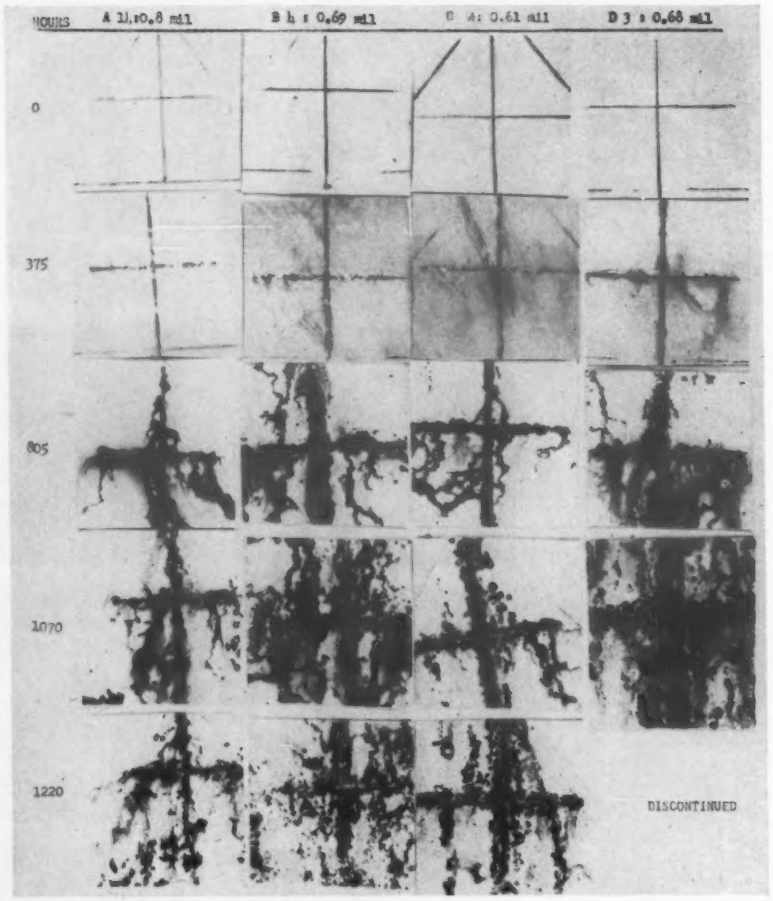
Stripping weight: 162 mg sq. ft.
Coated with OD Paint TT-E-485B
Paint Thickness: C 1 — 0.90 mil.
C 3 — 0.66 mil.
C 4 — 0.61 mil.
C 5 — 1.05 mil.
After 1220 hours salt fog exposure
(Panel C 3 after 1070 hours)

Figure 10

Treatment D — Iron Phosphate II

Stripping weight: 34 mg sq. ft.
Coated with OD Paint TT-E-485B
Paint Thickness: D 1 — 1.00 mil.
D 2 — 0.93 mil.
D 3 — 0.68 mil.
D 4 — 1.37 mil.
D 5 — 0.65 mil.
D 6 — 1.68 mil.
After 1070 hours salt fog exposure

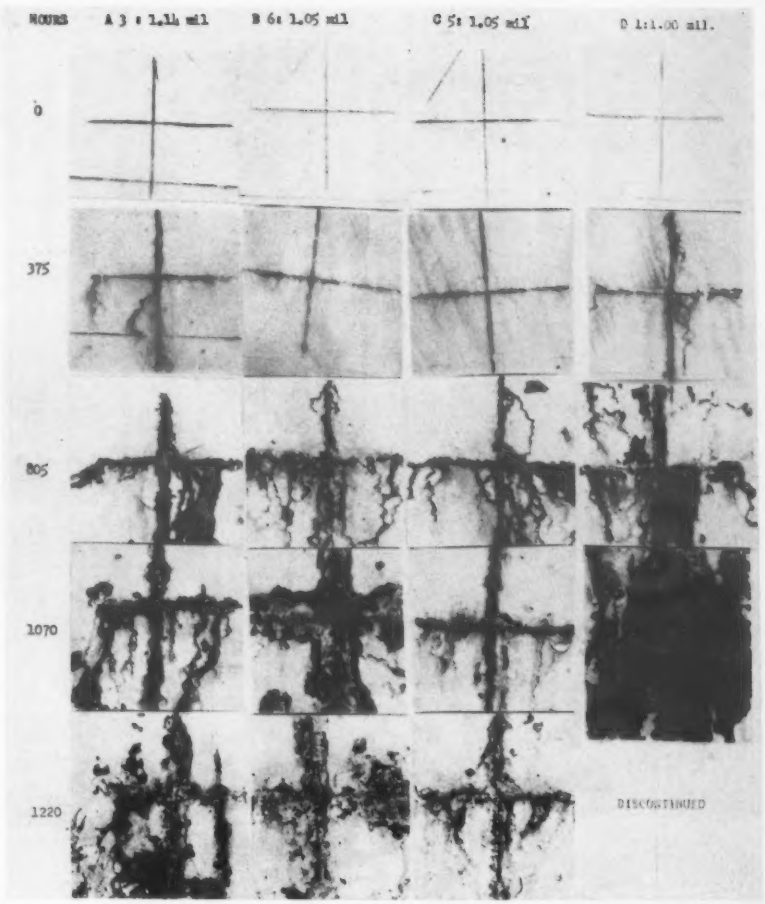
Figure 11



Paint Bonding Effects of the Four Treatments

Salt Fog Exposure Tests
O.D. Enamel TT-E-485B — Thin Coating 0.61/0.8 mil.

Figure 12



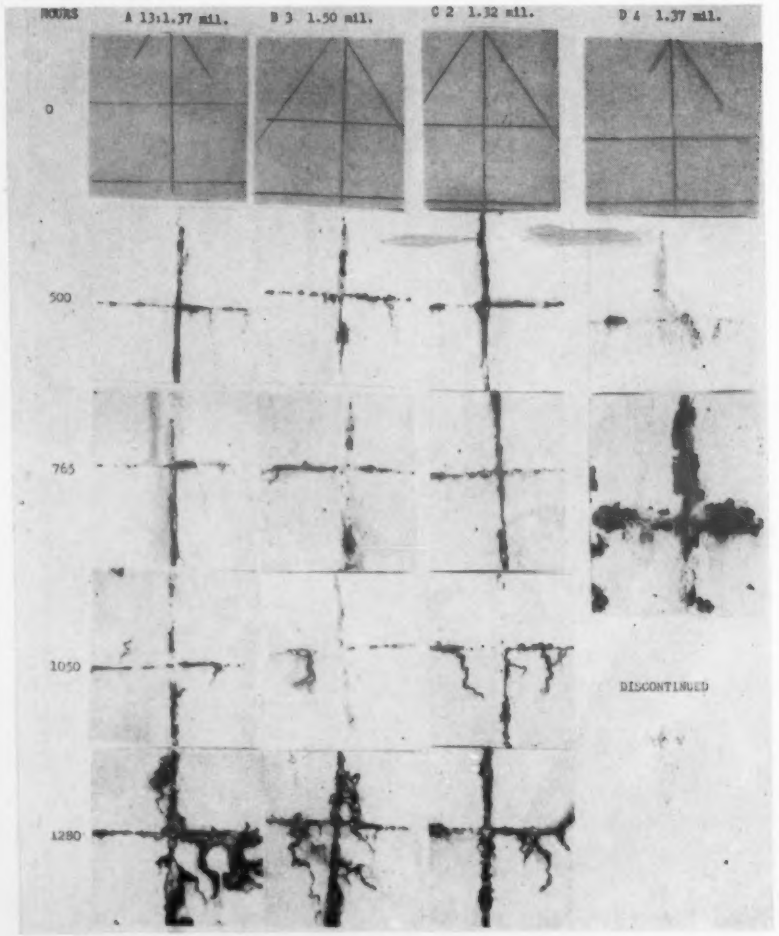
Paint Bonding Effects of the Four Treatments

Salt Fog Exposure Tests
O.D. Enamel TT-E-485B — Medium Coating 1.00/1.14 mil.

O.D. Enamel TT-E-485B — Thin Coating 0.61/0.8 mil.

O.D. Enamel TT-E-485B — Medium Coating 1.00/1.14 mil.

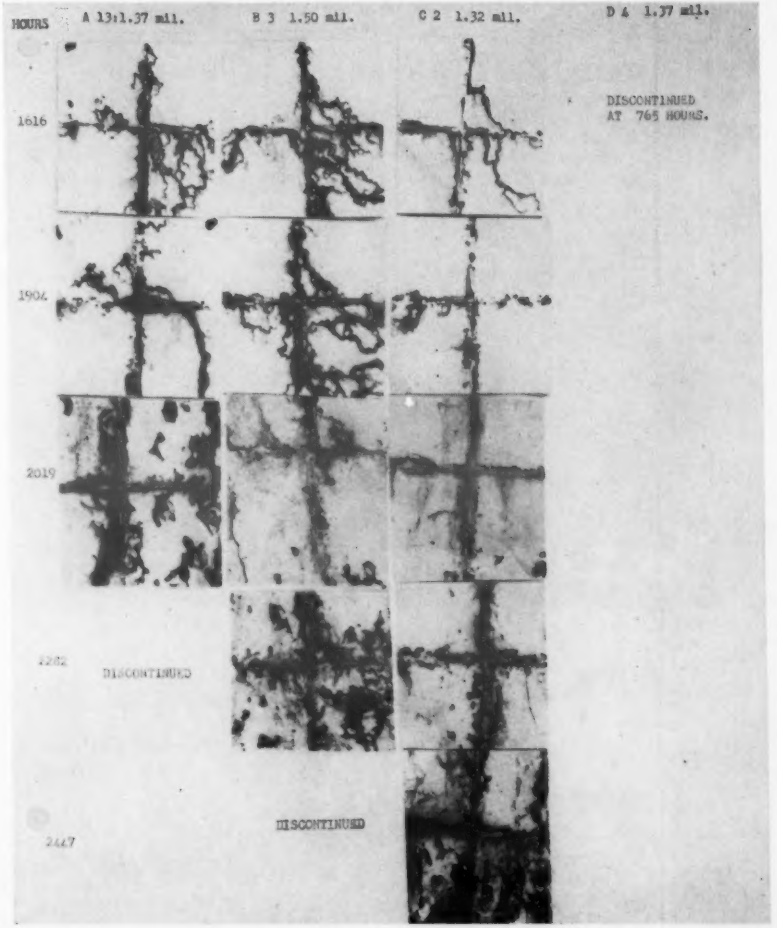
Figure 13



Paint Bonding Effects of the Four Treatments
Salt Fog Exposure Tests

O.D. Enamel TT-E-485B — Heavier Coating 1.32/1.50 mil. (I)

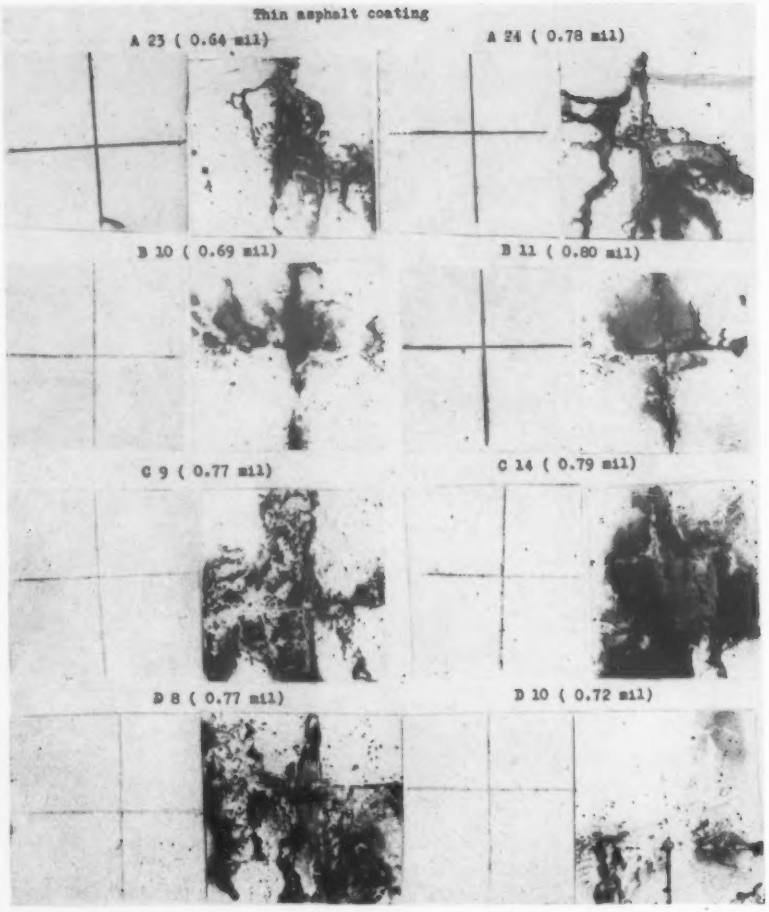
Figure 14



Paint Bonding Effects of the Four Treatments
Salt Fog Exposure Tests

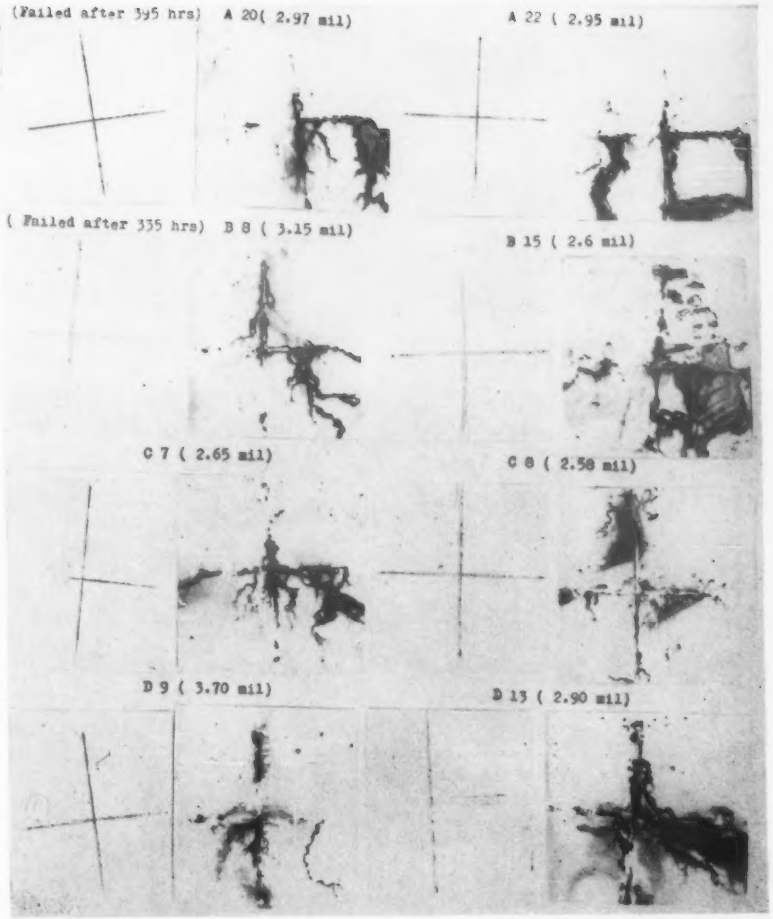
O.D. Enamel TT-E-485B — Heavier Coating 1.32/1.50 mil. (II)

Figure 15



Pre-treatment with Asphalt Coatings Before Salt Fog Exposure and after 240 hours exposure. The views shown are after removal of the adherent asphalt film.

Figure 16
Heavier Asphalt Coating



Pre-treatment with Asphalt Coatings Before Salt Fog Exposure and after 240 hours exposure. The views shown are after removal of the adherent asphalt film

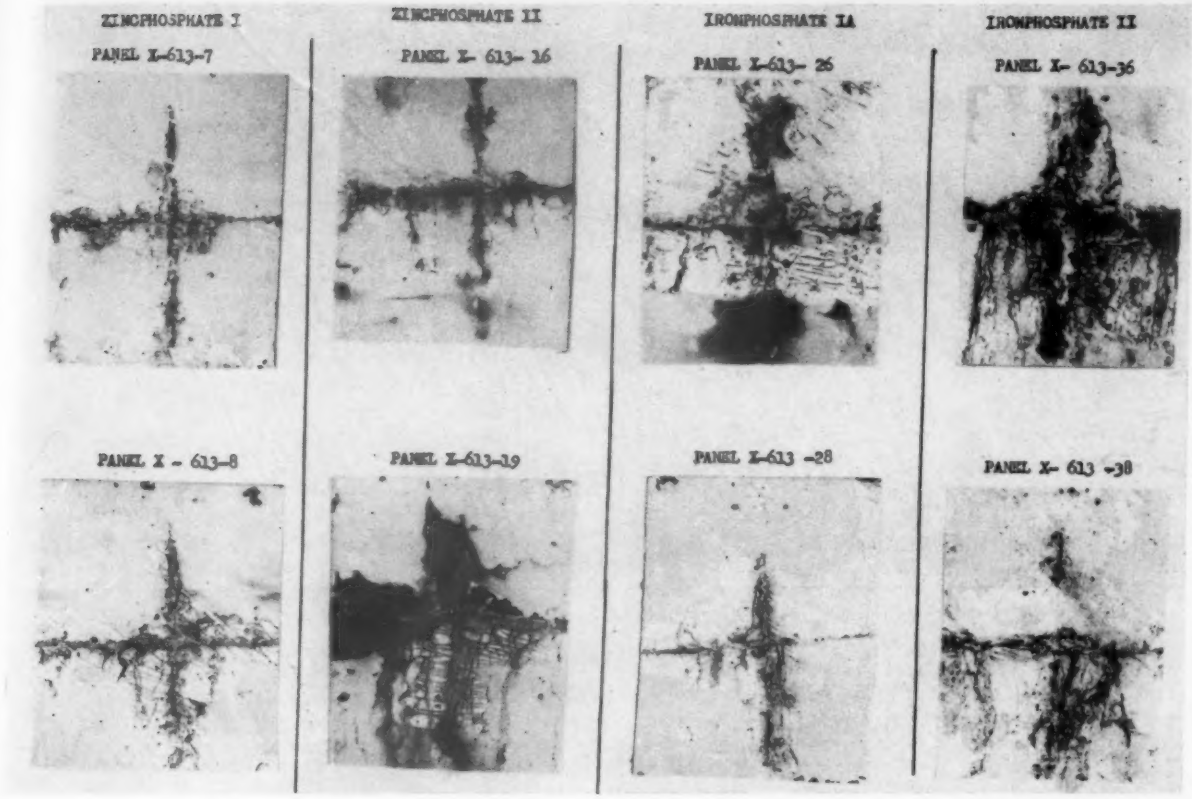


Figure 17. Comparative studies on Pretreatments with Asphalt Coatings
95 hours in the Salt Fog Chamber
Views shown are after removing asphalt coating.

penetration of moisture through the organic film and the subsequent effect of that moisture on the phosphate pretreatment. The film-thickness was determined according to A.S.T.M. Specification D1186-'51 T, using the Aminco-Brenner Magne-Gage.

One group of materials was exposed on outdoor weathering racks located on the roof of the Guggenheim Building on our Uptown New York University Campus. After 3 months exposure these show only very slight variations in behavior. Other panels were exposed in a salt-fog chamber having 10% sodium chloride solution at 80-85°F. Their appearance after their failure or after 1220 hours exposure, whichever occurred first, is shown in Figures 7,8, 9 and 10. To obtain permanent records showing the behavior of the systems at intermediate stages of the exposure in salt-fog, the electrographic printing method was used (3). The Paint Research Group in New York University has presented two earlier papers in this same A.CS. Division on electrographic printing. In this method, a photographic paper is saturated with an electrolyte solution and is applied over the paint surface. The panel with the paper is placed between two aluminum platens, under constant pressure, and a low voltage current is passed from the panel through the paint film to the paper. The current will flow only where there are pinholes or where the test-cross interferes with the insulating characteristics of the paint film, or where the electrolyte or salt-fog has penetrated through the film to the steel or has spread from the test-cross into and underneath the coating system. Where the current flows, it carries iron ions into the photographic paper where they can be transformed into a permanent blue matter by immersing the paper in a solution of potassium ferri- and ferrocyanide. In respect to color variations which occur in the course of long-time exposure as a result of chemical transformations from water-soluble to water-insoluble iron matter, reference is made to an earlier report of this group (5).

Figure 11 compares the prints of four panels each one having a different pretreatment and an organic coating of 0.61 -0.8 mil. The tests were made before exposure, after 375, 805, 1070 and 1220 hours exposure. It is seen that up to about 805 hours exposure the four pretreatments differed only slightly. But after 1070 hours exposure the paint-bonding qualities differed widely and the panels of Group D were discontinued because the paint had come off. The panels of Groups A, B and C differed little after 1220 hours exposure.

Figure 12 shows the prints of four panels each one having a different pretreatment and an organic coating of 1.0 to 1.14 mil. Here the Group D panel begins to loose paint after 805 hours and had to be discontinued after 1070 hours, since there was no longer any adherence of the film to the base metal, expecially around the test cross. There was not much difference in the effect of the salt-fog exposure on the pretreatments of Group A, B, and C. This is of interest because the pre-treatments varied widely as compounds and varied widely in their stripping weight. It is of interest to note that the successful range for the stripping weight is a characteristic of the various groups of pre-treatment materials rather than for the whole class of metal-phosphate treatments in general.

Figures 13 and 14 show the prints of four panels each one having a different

(*Turn to page 66*)

PART X

RESEARCH AND THE JOB OF MANAGEMENT

By HOWARD C. WOODRUFF
Alkyd Products Engineering
General Electric Co.

Today's business demands rapid adjustment to changing trends. But trends establish and are established by Research and Development results.

This article, the tenth in our series on Research and Development Technics, discusses the methods for use of research and development results by Management Groups.

IN ANY phase of the Coatings Materials Industry, the research and development operations can form only one function in a larger organization. But taking Research and Development operations together with Sales, Production and Management, we have a team organized for pushing toward the company goals of steady net returns and business permanency.

The research and development operation contributes one set of facts toward implementing the actions required for a company to make favorable progress in the dynamic environment in which all manufacturers of Paints, Varnishes and related materials find themselves today. Since Development groups work with specific information, the details of individual problems and predominately with materials, their results are detailed and available to Management in connection with individual problems. The management group on the other hand, works from a greatly different viewpoint. Management is primarily concerned with understanding and systematic evaluation of the industrial scene and in initiating action to improve the company's relative position in it. Where management requires specific information, new methods, or special materials to plan and accomplish the forward motion of the company, the function of Research and Development is called into action. The business situation then becomes the test area where Research and Development Results are evaluated and utilized.

In order to carry business expansions forward from a realistic basis and in order to make possible effective steps in retaining established business, each management group needs information on trends and a technic of control of operations.

Many business patterns can be separated into the following stages:

1. The stage of determining industrial trends and separation of trends into significant and non-significant.
2. The stage of planning to take advantage of a trend.
3. The stage of production and marketing from the research laboratory to full scale production.
4. The stage of controlling to determine the profitability of production and marketing and how economies can be effected.
5. Review of the effect of action and making the adjustments found necessary.

The Research and Developmen groups become active as cooper ators with Management in the firs four of these steps.

Trend Data

THE sources for guaging in dustrial trends can originate from Development, Sales and Management. Development

Editers Note: This discussion is based on the varied personal experiences of the author. The facts and examples cited do not necessarily represent the practices of any single company.

groups have as sources of industrial trends: Trade and Scientific Publications, Information obtained at Technical Society Meetings, Information from suppliers' technical representatives, Market Research Surveys, analysis of competitive products. It is important for a Development group to keep records on information that would add up to trend data and periodically interpret collected data into summaries of the basic trends in process of formation.

Management sections have other sources for trend information. Trend information becomes available when new materials are offered to the purchasing department, from competitive announcements of new materials, products or services, from competitive advertising, from sales reports of field contacts on new materials available — on new material requirements — on new plans of customers. Other management sources for trend information are: production reports by industry committees, production reports by government groups, forecasts of production and consumption by Industrial or Government groups. Certain changes in the national economic picture have a direct influence on industrial trends in the Coatings Materials Industry. Changes in population concentration have direct trend influence on market locations as do changes in the location of major consuming industries and changes (and simplification of customers manufacturing process.

Having checked and brought together trend data from the above rather divergent sources, sort the data in terms of factors contributing to customers requirements in a new market or to customers requirements in a revised established market. Considerable attention must also be given to evaluating the length and strength of the trend. Constant re-evaluation is required of both existing and incipient trends.

At the stage where management plans to take advantage of a trend, the Research Group is called into active operation. A plan consists of a picture of a possibility in the future in terms of technical, business, financial and sales trends, and the road map to getting there, and the balance of resources required to get there versus resources at hand. In this plan Research reports cover technical ways and means, market research point to sales possibilities, the Development group provide a route to the new business in terms of products and methods. Management functions at this stage comprise evaluation of business and financial requirements versus the possible ultimate pay-off.

Research and Development groups are beginning to recognize the importance of thinking in terms of setting trend data together into an oriented pattern and to recognize the necessity of working with management groups in planning future operations. These functions are not functions in addition to the generally accepted function of product design, production development and technical service in the field.

The Freeze Point

A fundamental difference between a research group and a management group is the distinct difference of viewpoint from which the action of each originates.

The management group acts as if a situation were static — their objective is to act on the information available each day in order to "keep going".

The research and development group on the other hand pay more attention to the changable nature of events and keep in mind that improvements can be made on any process and no product is the ultimate that can be achieved.

Before the production and marketing operations take over, a product and/or process is in the development stage — its design and method of processing is easily subject to change and as premarketing experience accumulates changes occur in rapid succession — the process or material being in the so called "fluid" or "tentative" status.

But before a sample is submitted to a customer and an order requested, it is necessary that processing, materials, final properties and controls be established. This is to say the process and material must be "immobilized" or "Frozen". A process must be in the frozen state in order to establish costs, selling price and production standards. But most of all the process must be in the frozen state in order that the customer may be assured of uniform performance when he uses the product.

The management group establishes a "freeze point" in connection with the development and introduction of a new material. This freeze point being established after suitable discussion with representatives of the groups involved. A freeze point is a statement of either "what to work toward" or "what to keep working on." When Development works toward product design, a product specification or a given customers acceptance makes a convenient "freeze point." When the objectives is process simplification or the use of an alternate material, a predetermined cost becomes a convenient "freeze point."

But from another standpoint managements recognize natural variances in materials processes and methods. In order to understand these variances, controls are established. When "control" is recognized as a comparative statement of present condition, it is compared to a previous condition and average of many previous conditions. Controls point to strengths and weaknesses. The strengths are rapidly passed to merchandising groups to use as competitive weapons: the weaknesses are subjected to study and adjustment. Controls, properly applied, result in improvements in planning, predictions, and the adjustment of a company's operations to the prevailing business environment.

Data-Results of Work

MANY of the common things done today in the Paint and Varnish Industry failed completely in the first few attempts to do them. The difference between the first attempts and current practice is the availability of information and data. Management groups easily recognize a product with unique features as the result of work, it is much more difficult to recognize data as the result of work. This is partly due to current accounting practice.

Data accumulated before a new product goes into production is most frequently charged a research and development expense. Data

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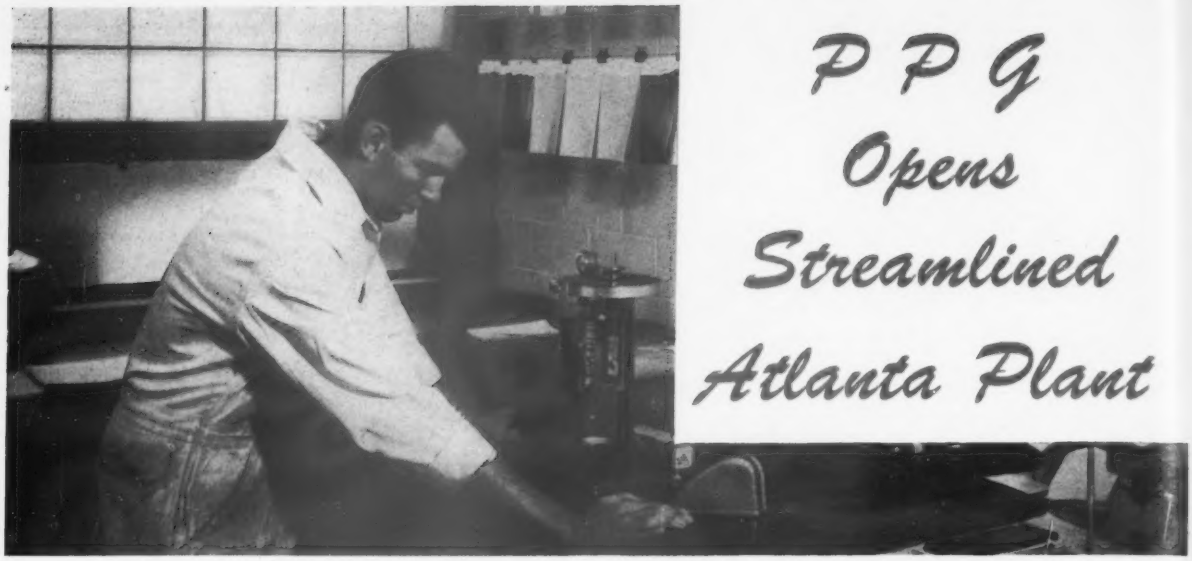

PPG Opens Streamlined Atlanta Plant

Every batch is checked by the control lab to insure uniformity and quality of production.

THE largest paint manufacturing plant in the Atlanta area and one of the largest in the Southeastern United States was formally opened in early October by the Pittsburgh Plate Glass Company. Situated on a 14-acre tract in the Empire Industrial Area of East Point, Ga., the plant fronts on Oakleigh Drive, approximately six miles S.W. of Atlanta.

Designed for rapid flow production of a complete line of house paints, varnishes, enamels, resins, industrial and specialty finishes, the plant is the third ultra-modern paint producing unit to be put into operation by Pittsburgh Plate in recent years. Others are located at Springdale, Pa. and Torrance, California.

E. D. Peck, vice president in charge of Pittsburgh Plate Glass Company's Paint and Brush Division recently said:

"These splendidly equipped production facilities here in the heart of America's industrial expansion center will enable us to provide speedy service as well as technical know-how to meet the ever growing paint needs of the great industries of the Southeast. The East Point plant will also enable us to provide a full line of quality consumer finishes to meet the demands of home painters throughout the area."

A radical departure from the multiple-story construction which has been considered essential for paint manufacturing, because of gravity flow requirements, the new Pittsburgh unit is essentially a single story, fireproof structure located on different levels. A mezzanine floor is incorporated for grinding and straining. Ball and pebble mills are suspended on structural steel frames beneath the upper decking with easy access from above for charging raw materials.

Originally rated to produce 1,500,000 gallons annually, the plant is so designed as to allow for future expansion of production without structural changes. Space for additional mills and filling equipment has been provided. The finished products storage area may be extended to the East and the raw materials storage section is extendable to the West.

Natural gas is used for heating but a fuel oil reserve tank is incorporated so that the system may be switched almost instantaneously in case of natural fuel failure.

The 130,000 square foot plant and office building is uniquely designed to provide several functional levels to speed indispensable gravity flow requirements in manufacturing operations. Railroad siding on the Central of Georgia is also provided on two levels to accelerate shipping and receiving. Modern laboratory facilities have been installed to aid in product development and quality control programs.

Tank farm storage at the rear of the plant provides a reserve for 250,000 gallons of liquid raw materials which are pumped to manufacturing points of use by a remote control system.

All office and laboratory space is air conditioned. The reception area of the office wing is encased in floor to ceiling expanses of polished plate glass with Herculite tempered all-glass doors serving the main entrance.

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View of the new streamlined plant located in the Empire Industrial Area at East Point, Ga.

Liquid raw material from tank farm are drawn by remote control; weighed off for the batch.

This production control board maintains a running inventory of batch operations in the plant.

Pigment dispersion is accomplished by roller mills. Here paste is ground on 5-roller mill.

The above photo shows an operator cooking varnish. For batches portable kettles are used.

Laboratory is equipped with a complete miniature roller mill for running off sample batches.

600-gallon batch is transported from one level to another in a portable tank to elevator.

Filling operations. Elgin filling machine automatically fills, covers and labels paint cans.

Tank farm capacity is 250,000 gals. Materials are pumped to point of use by remote control.

Candid Shots Gathered At The Paint Conventions, Palmer House, Chicago

National Paint, Varnish & Lacquer Association

64th ANNUAL CONVENTION

CHICAGO was the scene of the 64th Annual Convention of the National Paint, Varnish and Lacquer Association, held during November 17-19.

Some 3,000 executives and other managerial members of the paint industry were on hand to obtain first hand information on government's policies toward business under the newly-elected administration. The following are excerpts of the important speeches delivered at this convention:

President Joseph F. Battley

What do we see ahead for our industry under this new administration? Specifically, I believe that controls, which have already been lightened, owing to decreased government appropriations for control agencies, will continue to be eased, barring an unforeseen step-up in Korea or the cold war. Military procurement has apparently reached its peak. At any rate, the level seems to have been established at approximately four billion dollars a month. While government controls have been relaxed, military requirements and the government's stockpiling program may still touch us in one very vital place — raw materials. The outlook for 1953 is most favorable, although we are still encountering a few difficulties. Paraphenylphenol resins, cobalt salts and driers are still in short supply. Despite the loss of aluminum production from the drought in the Pacific Northwest and the Tennessee Valley, there should be enough powder and paste for our needs.

I am confident that we will report equally satisfactory gains at our 1953 convention. I am sure 1953 will go down in our annals as the most heartening, the most profitable year in the industry's history.

Rightly or wrongly, in the eyes of the public, the Republican party was pictured as the party of private enterprise, of enlightened capitalism. What does this imply? It implies that the businessman —and every one of you — every one of the businessmen in other industries — will have a spotlight on you. Individual enterprise has been given the go-ahead signal. Now the nation will be watching to see how well we carry out our responsibilities. Traditionally, the business man has opposed the principle of government regulation. Traditionally, the business man has claimed that free enterprise can still exist and produce in a world of conflict and dismay. Now, we arise to be judged. Regardless of our individual political affiliations, we must all recognize that the business man is not only in the spotlight — but on the spot. I am completely confident that the members of this industry will maintain their high standards — the same standards that have carried us forward for 64 years of united progress.

Clarence Manion

A greatly increased desire and capacity for personal self-government is our only defense against the mounting menace of Socialistic-Communistic depotism. When James Madison, the Father of the United States Constitution, stated that we had staked the whole future of our weak and decentralized political institutions upon the capacity of mankind for self-government, he was referring to our ability to restrain and control ourselves according to the Ten Commandments. As this personal capacity for individual moral self-control declines, the power of government inevitably increases in an attempt to take up the resulting slack.

In the mountainous maze of our modern educational system we have somewhere lost the self-evident truths of the Declaration of Independence, without which our system of constitutionally restricted government does not make sense. Nothing is so desperately needed today as a nation-wide popular educational campaign concentrated upon the fundamental American principle that "all men are created" and that government should be restricted to the job marked out for it when the Republic was born; namely, The Protection of the God-given Rights of Man. That, as Jefferson said, "Government should restrain men from injuring one another, and leave them otherwise free to follow the Pursuit of Happiness".

A constantly swelling government is a sure sign of moral sickness of the people under it. When the government swells the people shrink. Big government makes little people. What William Penn said one hundred years before the Declaration of Independence was written is true today; namely, "Those people who will not be governed by God will be ruled by Tyrants".

Leo M. Cherne

There are several main outlines of the months and perhaps the years ahead. In an understandable elation shared by most businessmen as a result of the election several weeks ago, I think the first reaction was one of unrelieved pleasure, relief and a feeling as though a burden had been lifted from the shoulders of the businessman.

I am not quite sure that I know what burden has been lifted from the businessman's shoulder or whether any of the many burdens have been lifted. I am not quite sure, as a matter of fact, what very fundamental change you are apt to see ahead of you. I am sure that some of the problems which have characterized recent years will remain undiminished and one or two in some respects will appear now in exaggerated form.

In appraising those problems, the one which stands most clearly beyond all others and which is the one which has shaped our national policy, which has shaped our business conduct, which has shaped the activities of every last man and woman in this room, is the existence on the face of the earth of the most dynamic, terrible and increasingly powerful dictatorship, that of the Soviet Union.

In the long-term problem it will be difficult for the United States to avoid a recession, perhaps, of sufficient magnitude to make us totally preoccupied with our own problems, and it is perhaps at that point that the Soviet Union can move in, into substantial portions of the world without confronting the risk of American action quite as actively as is the case today.

Let me move closer to the problem which you face here at home. May I first say that General Battley's assessment of the effect of the election which he gave you in his address opening this Convention is one with which I agree in every last detail.

But I would like to now move beyond that because all of political life, as virtually everything in life, is action and reaction. Thus far, we have been looking at the Republican Party and said to ourselves: How wonderful what has happened here. But I think at the same time we must take a look at the reaction because it is the reaction which is apt to present the problems to you, not the action, and the reactions of the Democratic Party.

What is going to happen to the Democratic Party which is another way of asking what is going to happen to your business?

I am going to throw this speculation at you. The result of the defeat on November 4 will be to drive the Democratic Party quite sharply to the left of where it was. The reasons are several.

The Eisenhower administration is not going to move very noticeably to the right of where the Truman administration was which means the party of the opposition has these choices.

It can either move to the right of the government or to the left of it. No matter how firmly it agrees with what government in power is doing, it cannot say so. That is a rule of the two-party system.

Lacquer Panel

One of the interesting highlights of the second day's meeting was the Lacquer Panel at which new uses for lacquer were discussed by R. I. Wray of the Aluminum Co. of America, J. W. Halley of Inland Steel Co., B. E. Clatworthy of Radio Corp. of America, and R. S. Temple of the Research & Development Board, Department of Defense. Chairman of this panel was Dr. F. G. Weed of the Rinshed-Mason Co.

R. I. Wray — Various types of lacquers were discussed, and advantages and disadvantages of each were presented. One of the most important uses of lacquers is in the protection of aluminum structures during the erection of a building. Lacquer prevents mortar and plaster from adhering to the aluminum. These materials, because of their alkaline characteristics, have a corrosive action on aluminum when in contact with the metal. This problem is eliminated by protecting the metal with a clear lacquer coating.

Certain cellulose esters such as cellulose acetate-butyrate in combination with alkyds have proved very satisfactory. Ethyl cellulose has been particularly good because of its good chemical resistance. Acrylic type lacquers and certain vinyl coatings are proving effective. The acrylics have been singled out for their good transparency properties, good abrasion qualities when formulated with small percentages of nitrocellulose, and excellent chemical resistance. Vinyls have good resistance to alkalai and good abrasion resistant properties.

J. W. Halley — With cold rolled steel sheets being manufactured on a continuous basis, there was a greater need for a protective coating of some sort to prevent rusting. Some of it was protected by metallic coatings, galvanized and tin plate, but most of it was protected by lacquer.

Since 1940, there has been a trend which has been most important in the steel industry and that has been the tremendous increase in the use of steel for containers, pails, barrels, cans and drums. Between 1940 and 1950, the use of steel for containers more than doubled. In all, we have occasions when it is necessary to protect the inside of the container from whatever is stored in it and to protect the outside from corrosion. There are still lots of things to be done that cannot be imagined in the steel containers, because the protective coatings are not completely satisfactory. Most of sheet steel application is dependent on the development of superior coatings.

Regarding the use of stainless steel, Mr. Halley pointed out that if there should be a marked drop in the price of stainless steel, this would have a detrimental effect on the use of organic coatings. However, he does not anticipate any drop in price in the stainless steel, since stainless steel is primarily dependent on one element, and this is chromium. Chromium imported in the United States, and since this strategic metal is important in the manufacture of structural steels, automotive steels, gears, shafts, springs, etc., it can be relatively certain that chromium is not going to get any cheaper. Thus, stainless steel will remain comparatively high in price. Hence, the bulk of our steel will be dependent upon organic finishes to protect them from corrosion.

Within the last 10-15 years, there have been some remarkable developments in the application of tin by electrolytic processes and zinc by continuous processes. As yet, these have not resulted in any marked decrease in the cost of galvanized sheets. They have resulted in a marked decrease in the cost of tin plate. We can therefore assume in the future the relative cost of metallic-coated steel mill to decrease. This isn't going to make much difference to the lacquer manufacturers because, in most cases, even though it does have metallic coatings, it is lacquered or painted anyway.

Broader applications of sheet steel are completely dependent on coatings that will protect them better.

B. E. Clatworthy

There are three major problems affecting the furniture industry today. These are the proper application and techniques and the processing of fillers; secondly, how to control lacquer shrinkages, and thirdly, how to control pinholing and air bubbles. The consensus of opinion among the various manufacturers is that the proper application and processing of fillers is the most important.

The consensus of opinion among the various manufacturers is that the proper application and processing of fillers is the most important. They believe this because we all know that the key to all good finishes is the filler and that in the good part, poor filling is apparent, because for the apparent troubles that we have in lacquer shrinkage and pinholing.

Now, I will tell you that individually the various manufacturers across the country feel that collectively the lacquer manufacturers have let them down in respect to fillers and their application. If you ask me on what basis I make this statement, I can only tell you that almost every manufacturer of wood products has continuous minor problems relative to filler, and periodically they experience very major problems with respect to filler. Very few manufacturers of cabinets and furniture have their own research departments. They relay entirely on you people for the development of their finishes and their preparatory finishes, and they feel that the lacquer industry as a whole has spent more time in research and development of the lacquers than they have on preparatory finishes such as filler, because it is a low-priced product and they don't think it represents much profit. And they do have the feeling that the lacquer manufacturers have not spent enough time in the development of that type of merchandise.

It seems to me that standardization is one of the most important things that can happen in the woodworking industry today and I believe that it is the responsibility of the furniture and finishing manufacturer to formulate materials to certain standard conditions; certain standard conditions of drying time, temperatures and all the other factors that go into making a good finish. These standard procedures should be published and made known to those who need them.

R. S. Temple — The Department of Defense is interested in coating with good durability, adhesion and weathering. With the supersonic speeds attained by aircraft today, the property of heat-resistance becomes an important one. There is a need for gasoline-resistant coatings, and for fire-retardant coatings, self sealing coatings, and coatings for magnesium and molybdenum.

Trade Sales Manufacturers' Forum

The Wednesday afternoon session featured the Trade Sales Manufacturers' Forum which dealt with such topics as Color, Competition of Materials Claimed to be replacement for Paint, the "Do-It-Yourself" Market, Water-The Hidden Menace, and How Can the Industry Expand the Clean Up-Paint Up-Fix Up Program.

Frank P. Connolly discussed color and pointed out that it was directly responsible for bringing the paint industry into the billion dollar class. He discussed new types of pigmentation techniques, especially luminescence together with special lighting to give a third-dimension effect.

William E. Hood spoke on other types of products which are being used as replacements in paints and pointed out that in many instances these gave false impressions to the consumer through advertising propaganda. He emphasized that the paint industry should tell the truth about their own products, and not sit back and let advertising statements be made which are so false that they are apparent on the surface, but too few people ever stop to think about the wording or even study the so-called guarantee.

R. J. Smith, Chairman of the Scientific Section, presented "The Hidden Menace" and told the members of the excellent reception that is being given the idea. He suggested that the industry carry this message to architects, builders, and bankers who make loans on buildings.

The Clean Up-Fix Up Campaign was reported by Walter G. Sibley, and he discussed what progress has been made in this direction during 1952 and pointed out that interest will run equally as high in 1953.

Bernhard H. Mautz closed the program with a talk on "Do-It-Yourself". He pointed out that his firm had much success with the theme "Paint It Yourself and Save Money". Due to the shortage of painters and the higher cost of labor, it cost from 2 to 3 times more to paint a house than in 1940.

Other forums held during this session was Putty Manufacturers' Forum and the Roof Coating Manufacturers' Forum. The Wholesale Distributors' Division Meeting featured a program demonstrating the importance of the wholesaler in the distribution of paint products.

The last session of the 64th Association convention was spotlighted by the Federation Activities and a talk by Ralph S. Trigg, Senior Deputy Administrator, Defense Production Administration, who spoke on controls for defense.

Hiram P. Ball, Pres. of Federation

In the past several years the growth of the Federation has been phenomenal. At the present time we have 3,187 members, technologists and production men of the paint industry in the United States, Canada and England. This growth is predicated on the belief of these men that membership in a local production club and in the Federation is important to them as a means of keeping abreast of developments in our industry and, therefore, being more valuable to you, their employers. Proof of Federation members' interest in their work is the amount of effort they contribute to the operating committees of the Federation.

The greatest contribution the Federation can make is in the fields of research and education. But I would not have you believe, however, that education and research are new themes for the Federation — they are the cornerstones. To highlight these aims, the keynote of our 1952 annual meeting is "Progress through Education and Research."

Our Research Committee, under the leadership of Paul O. Blackmore, has worked diligently on the many projects undertaken by the Federation, ably assisted by our research coordinator, Dr. Walter O. Lundberg of the Hormel Institute at Austin, Minnesota.

In the past five years $42,939.00 has been invested in our research program. In 1952 to September 30, $20,515.00 has been spent.

Perhaps the best known, and certainly the most ambitious program of this committee has been a "Study of Film Formation, Film Properties and Film Deterioration."

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Federation of Paint and Varnish Production Clubs

30th ANNUAL MEETING

RESEARCH and Education was the theme of the 30th Annual Meeting of the Federation of Paint and Varnish Production Clubs held November 20-22 in Chicago.

This theme was exemplified by Dr. J. T. Rettaliata, President of the Illinois Institute of Technology, who spoke on the importance of industrial research and education. He emphasized the need for more cooperation and understanding between industrialists and educators. Where such an understanding exists, it gives educators a more realistic picture of the American economy and how they can contribute to its success. With today's shortage of engineers and technically-trained personnel, industry derives considerable help in sponsoring fellowships designed to provide research for the particular firm concerned. On the other hand, educational institutions are aided financially by such an arrangement.

Dr. J. S. Long of the Devoe & Raynolds Co., keynoted the meeting with a talk on "Research and Education". Dr. Long told the audience, composed mostly of technical men, of the importance of pursuing various interests outside of their vocation to obtain a rounded life which will be most beneficial when they retire from their business activities.

Dr. Long stressed the fact that only the beginnings of synthesis are being used, and that research is definitely needed, far beyond what has been done. In this connection, the Federation has an active program going when men band together and do research jobs which as individuals they could not do otherwise.

General Joseph F. Battley, President of the National Association, explained the great possibilities that the paint industry offers to the technical man and stressed the importance of the technical man in the company's future. Without new products or ideas, a company engaged in the paint industry cannot last if it wants to stay in business. And it is in this regard that the technical man has an important responsibility.

One of the most interesting segments of this meeting was an Education Session. M. A. Glaser of Midland Industrial Finishes, Waukegan, Illinois, discussed in detail the "Paint Course Package", pointing out its use in schools throughout the country as well as it being adapted for college use.

An informal round table discussion was also included in this education session. Those participating in this discussion were F. Scofield, Moderator, E. G. Bobalek, Dr. W. Bosch, D. H. Parker, and Dr. C. W. Selheimer. These men discussed the various paint courses held under their direction and suggested to the industry the steps to be taken in order to obtain the maximum benefits to both the student and the industry. One of the problems confronting paint education is the lack of men from industry who can take the time to teach the necessary technical courses as applied to practical work in the field.

Mattiello Lecture

John R. MacGregor of the J. R. MacGregor Lead Co., was selected to give the 1952 Joseph J. Mattiello Lecture. His talk dealt with the subject "Unexplored Fields in Exterior Paints".

Mr. MacGregor outlined the development of exterior house paints and pointed out that a mixture of lead carbonate, zinc oxide, linseed oil and drier was considered a good paint in the early days to the extent that North Dakota required that all paints sold in the state have a label on the can listing all ingredients present. The purpose of this law was to prevent the sale of inferior paints which consisted of such substances as sugar, water, alcohol, inert pigments, etc.

"We are in need of better exterior house paints today, since many crack, fade, chalk, and peel after a period of exposure," Mr. MacGregor said.

In order to eliminate these undesirable properties, it is essential for our paint-chemists to study the gel structure of vehicles and the effect of various classes of pigments on these gel structures.

Mr. MacGregor related his experiences in studying the effect that water had on exposed paint films and emphasized that in order to eliminate the damage that water causes to paint films, a new approach in the formulation of exterior must be initiated. Standard formulation as laid down in some of our Government specifications is not the answer to this problem. Better formulation based on a study of the gel structure, pigmentation and plasticization is one approach which will lead to better results.

Paint Industries' Show

This year's Paint Industries' Show consisted of 66 exhibitors together with 22 firms participating in one exhibit featuring the latest in lacquer manufacture, uses and application. Interest in all phases of manufacturing and in new raw materials was clearly demonstrated by the continuous presence of an overflowing crowd in the exhibition hall. Production men, chemists, and technical directors seeked information on new materials and equipment in order to prepare themselves for an unprecedented record in paint consumption anticipated during the coming year. A check revealed that there was a great deal of interest in new machinery and equipment than in previous years. This is, of course, very significant and indicates that the paint industry has no illusions that next year will be a banner year.

Important developments in the way of raw materials exhibited at this show consisted of the following: new techniques to improve properties of chlorinated rubber; two new latices for use in water thinned coatings; flat wall alkyd resins; dispersed pulps for latex paints; stabilizers for plastisols, organosols, and vinyl paints; fast-dry, quick-bake alkyd for industrial finishes; odorless solvent; odorless vehicles; ketone base resins; and red iron oxide pigments.

A highlight of this year's show was the Lacquer Information Center, which presented information on the latest methods of application, durability data, development in furniture finishing, military lacquers, emulsion techniques, aerosol formulation, and the latest in spraying equipment.

Manufacturers of latex resins and odorless vehicles had unique exhibits which vividly showed paint chemists the methods of formulation of these products and the many desirable features they have in winning consumer acceptance.

Round Table Discussions

An interesting phase of the Federation's meeting was the presentation of four round table discussions. Topics covered in these discussions were latex paints, corrosion, pigment dispersion, and "gadgets and gimmicks".

Latex Paints — This discussion was arranged by M. Van Loo and L. E. Ludwig. Panel members included: M. Westgate, moderator, H. L. Beakes, F. J. Hahn, P. C. Herzog, P. T. Howard, D. A. Kohr, Jr., R. Marshall, and M. Morand.

Various aspects of latex paints were discussed and the problems encountered in using different latices were presented in the form of questions from the floor.

An interesting point brought out by this panel discussion was that latex paint development was in its infancy and had a long way to go. It was predicted that latex paints for exterior use was a possibility which was dependent on the development of new latices and improved formulation techniques, especially in the pigmentation component of the paint.

Corrosion — This discussion was arranged by G. Diehlman with the participation of T. Dembski, A. J. Liebman, F. T. Radecke and F. C. Weber, Jr.

Mr. Diehlman briefly outlined the toll suffered by metallic corrosion and pointed out that the prevention of corrosion was, for the most part, by the employment of organic coatings.

Various questions were asked of the panel members. A topic which was discussed in detail was surface preparation, especially sandblasting, wire brushing, and phosphate treatments. Mr. Liebman advised that the process which one uses depends on the economics involved, environment, and the ultimate coating to be employed.

Other problems which were given attention included the painting of steel tanks, the use of mastic and cement coatings, the need for a simplification in paint formulae, which could be a guide in producing coatings specifically designed for preventing corrosion.

Pigment Dispersion — This important phase of paint manufacture was arranged

(Turn to page 38)

Chemical Industry Maps 4-Year 5 Billion Dollar Expansion Plan

About five billion dollars will be invested by the chemical industry for production facilities expansion in the four-year period between 1951-1955, Dr. George E. Holbrook, Director of the Chemical Division of the National Production, announced recently.

The estimate was given in a progress report on the Chemical Division's expansion goal program.

Dr. Holbrook pointed out that the figure represents total expansion of facilities for the production of chemical products under the jurisdiction of the Chemical Division and does not include synthetic fibres, rubber, fats and oils, petroleum, and agricultural and mineral products which may be used by the chemical industry but which are handled by other NPA divisions or claimant agencies.

He added that the chemical industry's expansion program tops that of every other industry except steel.

The peak of construction between 1951-1955 is expected to occur during the first half of 1953, Dr. Holbrook said.

He added that the expansion program will provide unprecedented increases in the production of such basic raw materials as chlorine and nitrogen.

Notable increases also will be made in the production of other significantly important chemical raw materials (of interest to the paint industry): sulfur, sulfuric acid, such coal tar and petrochemical products as phenol, naphthalene, phthalic anhydride, formaldehyde, ethylene oxide, ethylene glycol, trichlorethylene, carbon tetrachloride and methylene chloride.

Of 176 expansion goals established by the Defense Production Administration on the recommendation of various claimant agencies, 56 covered the production of essential chemical materials. The chemical goals thus far established will increase capacity of the materials affected by 70 percent over the January 1951 capacity.

In connection with the setting of the chemical industry goals, the Chemical Division completed more than 100 supply and requirement studies to determine whether or not expansion of facilities for the production of certain chemicals was needed and if so to what extent.

The Department of Commerce fixed expansion goals for all chemicals presented for consideration by the Chemical Division with the exception of sodium phosphate, citric acid, carbon, carbon bisulfide and acrylonitrile.

Because of changing demands for various chemical materials for both essential civilian and military needs, the Division is continuing its work of reviewing supply and requirements for important chemicals.

Dr. Holbrook made clear that the chemical goals thus far established have been set on the basis of partial mobilization needs. The Division presently is in process of preparing studies of the basis of full mobilization needs for chemicals including those for which partial mobilization goals have been set.

Attendants at recent meeting of Research Committee of Colorizer Associates.

Discuss New Color Paint System At Colorizer Associates Meeting

A new Colorizer Deep Tone System was the subject discussed at a recent meeting of the Technical Research Committee of Colorizer Associates, Inc., held at the Hotel Utah, Salt Lake City, Utah, according to a Colorizer Associates report.

The new system contains flat paints, house paints, porch, floor and deck enamels, decorative enamels and trim and shutter paints and will be an auxiliary system to the 1,322 Colorizer paint colors now marketed through over 5,000 dealers in the United States and Canada, the report said.

Also discussed were several new products now in the laboratory stage.

Among those who attended the meeting are: James Creager, Jewel Paint & Varnish Co., Chicago, Ill.; Carl Engelhardt, Brooklyn Paint & Varnish Co., Inc., Brooklyn, N. Y.; Frank S. Grundy, Imperial Varnish & Color Co., Ltd., Toronto, Canada; Lyman Hunter and John Holmes, Bennett's, Salt Lake City; M. H. Hanson, W. H. Sweney & Co., St. Paul, Minn.; Robert W. Matlack and Robert Toothill, George D. Wetherill & Company, Inc., Philadelphia, Pa.; Ernie Johnson and Frank McLister, Kohler-McLister Paint Co., Denver, Colo.; Stephan Hann, Great Western Paint Corp., Kansas City, Mo.; Robert S. Allison, Jr., Jack Nielsen, Richard S. Bennett, Lee Olsen, George Jensen, Ralph E. Moon and Orson Goodyear, Bennett's, Salt Lake City; Jack Vogt, Blue Ribbon Paint Co., Inc., Wheeling, West Va.; L. D. Warren, Warren Paint & Color Co., Nashville, Tenn.; Fred Meifert, Vane-Calvert Paint Co., Inc., St. Louis, Mo.; F. R. Hetrick and Tom Toxby, Walter N. Boysen Co., Oakland, Calif.; Loren Odell, James Bute Co., Houston, Tex.

Plant Maintenance Meeting To Have 2 Sessions On Chemical Plant Care

Two sessions of the forth-coming Plant Maintenance Conference will be set aside for the discussion of chemical plant maintenance.

The conference takes place at the Public Auditorium, Cleveland, Ohio, January 19-22, inclusive, concurrently with the Plant Maintenance Show, where thousands of machines and products needed in maintenance will be exhibited.

Industry leaders from all parts of th country are expected to attend the sese sions devoted to the chemical industry which will consist of round-table discussions conducted by a chairman and a discussion leader.

The first session will take place Tuesday, January 20, from 2 to 4:30 p.m., and the second at the same time the next day.

NPA To Keep Restrictions On Imported Critical Materials

Restrictions on such imported critical materials as chromium, manganese, and colbalt are inevitable as long as we have unfilled stockpiling programs, the National Production Authority, Department of Commerce, today told the Paint Industry Technical Advisory Committee.

NPA pointed out that almost all of these metals must be imported. The import percentages for each metal are chromium, 99; cobalt, 95; and manganese, 95. Compounds of each of these metals are used in a number of paint formulations.

Supplies of paraphenylphenol resin and methylene chloride, a paint remover, have improved in recent months, NPA told the committee. Increased production of paraphenylphenol by a new direct process brought September 1952 production to the highest level on record. New production of methylene chloride, which became available in July 1952, brought supply and requirements into balance for the past three months.

However, NPA stated, both chemicals are not yet "out of the woods". The backlog of orders for paraphenylphenol is still so large that it will be the turn of the year before supply and requirements may be brought into balance. In addition, military demands are expected to be heavy.

With respect to methylene chloride, NPA said, projected demands by the military will make it necessary to continue this chemical under allocation.

An industry representative presented a technical report on color pigment substitutions from a color standpoint only. He emphasized that paint qualities of any formula would have to be considered in substituting less critical materials for materials usually used as pigments.

The committee recommended that a representative of the drier manufacturing industry be called on to develop information on drier formulations which might be used in place of cobalt driers in exterior paints. In addition to drier formulae known to the paint industry at large, industry spokesman pointed out, certain drier manufacturers have developed drier using rare earths and zirconium in place of cobalt.

A. P. Mills of NPA's Chemical Division presided.

The following members from industry attended:
J. C. Konen, Archer Daniels Midland Co., Minneapolis, Paul Whitford, Eagle-Picher Co., Cincinnati, Royal A. Brown, Egyptian Lacquer Mfg. Co., Newark, N. J., Paul Blackmore, The Interchemical Corp., New York City, Charles Love, C. K. Williams and Co., Easton, Pa., Hugh Aiken, Piedmont Paint Mfg. Co., Greenville, S. C., Donald Leever, Reichhold Chemical Co., Detroit, George A. Tracy, Rinshed-Mason Co., Inc., Detroit

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Pittsburgh Plate Glass To Donate A Fellowship To Mellon Institute

The Pittsburgh Plate Glass Company will donate a new multiple fellowship to be organized in the near future at Mellon Institute in Pittsburgh, according to a recent joint announcement by Richard B. Tucker, executive vice-president of the company, and Edward R. Weidlein, president of the Institute.

The research group will make studies in solid state physics, surface chemistry and the chemistry of molten inorganic systems, the announcement said.

Dr. T. H. Davies, a graduate of John Hopkins University, will head the group. He has had an extensive back ground in nuclear studies including service at the University of Chicago as associate professor in the chemistry department and acting director of the Institute of Radiobiology and Biophysics.

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Calco Chemical Division Wins Parent Firm's Safety Award

Presentation of the American Cyanamid Company's Safety Award bronze plaque to its Calco Chemical Division highlighted the firm's "Safety Reminder Week" held November 3 through 8, according to an American Cyanamid release.

Calco won the award by working more than 4 million two hundred thousand man hours without a lost-time accident between March and October 1, the release said.

The week-long program started with a safety rally to which all employees were invited. Special safety posters and detailed programs featured such major phases of safety as plant housekeeping, fire safety, personal protective equipment, safety practices and safety conditions.

S. F. Spence, Cyanamid director of Safety and Fire Prevention, said the Company's safety record last year was 57 per cent better than the rate for the chemical manufacturing industry.

The three annual Trigg Scholarship winners. Dr. Wouter Bosch, College Chairman at right

3 Annual Paint Scholarships Granted by Trigg Foundation

The Board of Trustees of the Ernest T. Trigg Foundation announced recently the granting of three annual scholarships in the paint course conducted by the North Dakota School of Agriculture.

The students who were awarded the scholarships are Don E. Pehrson, Stanley Lokken and Leslie M. Ferris.

The three awards are the first to be given out by the Foundation in its program to foster the development of the paint, varnish, lacquer and kindred products industry.

Further awards will be considered and made from time to time by the Foundation. Request for awards will be considered by an Advisory Committee consisting of the President of the National Paint, Varnish and Lacquer Association, the President and the President Elect of the Federation of Paint and Varnish Production Clubs and one member of the Foundation's Board of Trustees.

NATIONAL PAINT . .

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There are many other projects under way through the Research Committee. Some are of a practical nature such as the Federation's cooperation with the Chicago Paint, Varnish and Lacquer Association in the project on fume control under the leadership of Dr. C. W. Selheimer of the Illinois Institute of Technology.

Long-range planning is always a facet of our research program. Ideas, suggestions and recommendations must be thrown into the hopper for consideration and evaluation. Please be sure that our hopper of research suggestions is never empty. As an example, we are now considering a project in the field of corrosion which we believe will be most fundamental and basic. An outline has been submitted by Dr. J. S. Long, a member of our Research Committee. The scope of this outline is tremendous; it will take a year or two of analysis, of breaking down the mosaic into smaller pieces, of deciding policy and determining how to handle details inherent in setting up such a program.

At the moment, and for immediate consideration, one of the most important contributions the Federation has made to the industry is the Color Aptitude Test. In cooperation with the Inter-Society Color Council, probably the most widely accepted group of color experts in the world, this test has been brought to practical application.

The Federation Educational Committee, M. A. Glaser, Chicago Club, chairman, realized the dire necessity of attracting more technically trained and educated personnel to our industry. The early history of our industry is replete with factual and fanciful stories of family tradition in which the know-how was passed down through generations from father to son. With the transition of our industry from an art to a science, the future development of the paint industry is predicated on the number of technically trained individuals we can attract to our industry by virtue of its scientific possibilities and opportunity for advancement. Competition from industries of greater proportion, greater glamour and, perhaps, greater opportunities, is one of the major problems.

Most of the standards and methods used in our industry are the result of the cooperative effort of the Federation and A.S.T.M. At the present time the Federation, the Scientific Section and A.S.T.M. are working on the revision of Federal Specification TTP141B which has to do with sampling, inspection and test methods. If our industry had not accepted its full responsibility in the revision of the publication, it would have had to hold its peace forever and live with its problems.

The Federation Manufacturing Committee, under M.C. Slack of the C-D-I-C Club is preparing the groundwork for a paint industry equipment guide. Such a directory will prove most valuable for those charged with the responsibility of selecting new equipment, making replacements, repairing and maintaining the efficiency of our plans and equipment. We will receive the wholehearted assistance of the equipment manufacturers in this endeavor.

C. Homer Flynn, Exec. Sec. of Fed.

One of the major problems that the paint industry has encountered from time immemorial is that of selecting and training personnel for color work.

While training has been, to a great degree, a matter of time and experience, the problem of selecting one of a group of people to train has been more or less on a hope and pray basis.

The problem of recognizing color aptitude and developing this talent is a problem in all industries in which color is the key to progress.

Recognizing this fact, the Inter-Society Color Council, probably the greatest collection of colorists in the world, appointed a committee in 1940 to undertake the development of a test for color aptitude. The Federation, a member body of the Inter-Society Color Council, has sponsored this effort and now presents the Color Aptitude Test 1953 Edition.

The basic aim of the test is to produce a very exacting measurement of color skill, actual and potential, of industrial workers whose jobs require them to make rapid and accurate judgments of color matching. The first and most obvious use of the Color Aptitude Test would be in screening new employees who are likely to work in jobs in which accurate color judgments are necessary. Predictions can be made whether such new employees will profit by training in color matching and will eventually become accurate and dependable color matchers.

Mr. Flynn then discussed the mechanism of the Color Aptitude Test and the results obtained from such a test.

Ralph S. Trigg

Mr. Trigg pointed out that unless controls are objective, they are of a little value. For controls to work satisfactorily, they obviously need the support of both industry and labor. Mr. Trigg then outlined how controls worked and reviewed the present materials program and made these forecasts. Copper will be very tight in supply and the chance of removing controls this year are less favorable than a few months ago. Mr. Trigg pointed out that small business men should have an opportunity to rebuild their inventories which were depleted during and after the steel work stoppage, before controls are completely removed. Decontrol will be accomplished in an orderly manner and with proper consideration for the best interest of the nation.

FEDERATION . . .

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by H. Kelfer. Panel members consisted of H. Kelfer, moderator, A. Barkman, W. Hoback, C. Hoffman, D. Leever, and O. Redd.

O. Redd discussed pigment dispersion by ball and pebble mills and pointed out the importance of considering the problem of shearing stresses in order to obtain satisfactory pigment dispersion. He also discussed high density grinding media and factors which must be taken into account in charging the mill.

A. Barkman presented three factors which make some of our present-day pigments hard to grind. These are the presence of salts (formed during the manufacture of the pigment) which cement the pigment particles together; electrolytic attraction; and oversized pigments. To obtain softer grinding pigments, the pigment manufacturer must develop better crystals, wash the pigment thoroughly to eliminate the presence of salts, employ better pulverizing techniques, classification and packaging.

D. Leever stressed the importance of the vehicle or dispersing media in obtaining better dispersion results. Essentially, grinding consists of breaking down the agglomerates, wetting the pigment by displacing air and water around the vehicle.

With dispersing media varying from oil to water and the use of such new materials as vinyl and rubber compounds, the problem of dispersion becomes more complex and each class of vehicles must be treated separately for obtaining optimum results.

C. Hoffman talked about the roller mill and its flexibility in the manufacture of different paint products. He emphasized the need for improving paint machinery from time to time to commensurate with the advances made in paint manufacturing. An engineering approach is necessary to help solve the paint manufacturers' problems of dispersion. In this connection, he pointed out the progress paint machinery manufacturers have made by the inclusion of instrumentation in their paint equipment. As an example, he cited predetermined settings which can be made on a 3-vertical mill to give reproducible results, thus eliminating the human error in processing techniques.

W. Hoback dealt with the dispersion of color pigments and demonstrated that color quality is dependent on particle size distribution. Over grinding can result in oversize pigments.

Mr. Hoback emphasized that one must study various pigment classifications and their behavior in the dispersion process, and closed with comment that each pigment is a study in itself.

Gadgets and Gimmicks — This round table discussion drew the attention of many technical men. Under the direction of W. Kentner, the panel members were: R. G. Fortener, J. R. Kohr, E. R. Mueller and W. E. Winkler. Mr. Kentner acted as moderator.

Mr. Kohr spoke of methods developed in his firm to facilitate the labelling of square gallon cans and also presented a method to ease the handling of fully loaded 55-gallon drums so that only man is needed to do the job.

Mr. Fortener told the enthusiastic audience of a means to clean dirty solvent which was used in and around the plant and laboratory. By placing a steam line in a still containing the dirty solvent, a mixture of solvent-water vapor is transferred to another tank (leaving the dirt behind) where it is condensed to a mixture of solvent and water. Since in most cases these two substances are immiscible, one simply has to draw the water off and reuse the solvent again for cleaning purposes.

Mr. Mueller spoke of a rapid method to determine solution cuts by placing a pint bottle of the solution in a gallon can and revolving the can.

Mr. Winkler discussed the use of a safety device to insure the operator whether a valve in a kettle is closed or not.

From the many production men who attended these sessions, came numerous "gimmicks." These included the use of a grease gun to obtain a pint sample for testing; the utilization of a garden hoe for scraping the sides of a tank, and spatula, 6 feet in length, designed for the same purpose; a slide rule adaptation so that the ordinary workman could make calculations and not make error in the decimal point; charging a ball mill by using an inverted hopper arrangement or mechanical vibrators on the hopper itself; and a safety feature in cleaning roller mills

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SPECIAL PRODUCTS DIVISION

BARTLESVILLE, OKLAHOMA

*A TRADEMARK

Arthur W. Masters Appointed Assistant to President of NY PVLA

Arthur W. ("Jack") Masters was officially approved as Assistant to the President of the New York Paint, Varnish and Lacquer Association, by the Association's Executive Committee, on November 5, according to an Association announcement.

Mr. Masters had been recommended for the post by a special committee composed of three leading members of the paint and lacquer industry, the announcement said.

He will make his headquarters in the Association office at 2 Park Avenue.

Mr. Masters began his affiliation with the paint industry in the early 30s, starting with Acme White Lead & Color Works, Inc. Later, he was transferred to the Martin-Senour Company, where he worked to establish their automotive refinish line through the National Automotive Parts Association. In the late 1930s he became affiliated with the Ditzler Color Division of the Pittsburgh Plate Glass Company, traveling throughout the United States as a special representative.

In 1945, when the Beckwith-Chandler Company was purchased by Devoe & Raynolds Company, Inc., Mr. Masters joined that organization to become Sales Manager of the Automotive Division, and remained in that capacity until his recent resignation.

•

Glidden Head Says Firm Will Market New Latex Base Enamel

The first latex emulsion interior enamel ever developed will be marketed next spring by the Glidden Company, according to a recent announcement by A. D. Duncan, vice president of the firm and general manager of the Paint and Varnish Division.

Mr. Duncan's statement was made to top Glidden paint executives from all parts of the United States attending a three-day meeting at the Hotel Carter.

According to Mr. Duncan, the new latex base enamel is designed primarily for interior woodwork, bathroom and kitchen walls.

He added that the new enamel will be produced in a full range of colors from deep tones to pale pastels to match those of Glidden's Spred Satin Dramatone System.

Gustave H. Wescott Elected President of the FPVPC for 1952

Gustave Hiden Wescott, of E. I. duPont de Nemours & Company in Philadelphia, has been elected president of the Federation of Paint and Varnish Clubs for 1952. He succeeds Hiram P. Ball, whose tenure of office terminated at the close of the Annual Meeting in Chicago.

Mr. Wescott was formerly president of the Philadelphia Club in 1949-50, and has been a member of the Federation Executive Committee for the past two years. Some of his Federation activities include the compilation of the internationally accepted Exposure Standards Manual and Chairmanship of the Host, Paint Industries' Show, Program, and Meetings Committees.

Thomas C. Keeling, Jr. Appointed Head of NPA's Chemical Division

The appointment of Thomas C. Keeling, Jr., of Pittsburgh, Pa., as Director of the Chemical Division of the National Production Authority, U. S. Department of Commerce, was announced recently by the NPA.

Mr. Keeling is on leave from his position as assistant vice-president and sales manager of the Chemical Division of Koppers Co., Inc., of Pittsburgh, where he has been employed since 1945, the report said.

Before the present appointment, Mr. Keeling served as Deputy Director of the Chemical Division.

He was employed by the Niagara Alkali Company of New York City, as a sales engineer from 1935 to 1941, when he entered the Army.

Practical Paint Course at Harvard Will Begin Jan. 6 and end Mar. 10

The Third New England Decennial Practical Paint Course will begin Tuesday evening, January 6, 1953, at the Harvard Graduate School of Business Administration in Cambridge, Mass., according to a Federation of Paint and Varnish Club report.

Lecture sessions will be held each Tuesday evening thereafter, up to and including March 10, for a total of ten sessions, the report said.

The course, consisting of a series of a non-technical lectures, is designed to interest people of every level of the paint industry including plant executives, technical and production personnel, salesmen, paint store operators, students, and possibly raw material suppliers. Many simple visual demonstrations and/or slides will be used in the course of the lecture.

After each lecture, from 30 to 45 minutes long, a question and answer period will ensue. A copy of the lectures and a transcript of each discussion will be sent to everyone enrolling in the course.

The fee for the course, which includes copies of the discussion and lecture material, will be $10.

Anyone interested in the course should contact Dr. Alan R. Lukens, Landon Putty Works, Lukens Laboratories, 227 California St., Newton, Mass.

•

R. S. Roeller of Pennsalt Dies After A Brief Illness

Russell S. Roeller, General Sales Manager of the Pennsylvania Salt Manufacturing Company, died recently after a brief illness in the Phoenixville, Pa., hospital. He was 60 years old.

One week before his death, Mr. Roeller had been honored for his 30 years of service with Pennsalt at a luncheon with Company executives.

During most of his career his chief interest was in developing markets for bulk or tonnage chemicals, and establishing long term customer relationships for such chemicals. Mr. Roeller played a major role in broadening the industrial use of such products as chlorine, hydrofluoric acid, cryolite and many others.

Mr. Roeller joined Pennsalt as a salesman in 1922.

NEW PRODUCTS & IMPROVEMENTS

A MONTHLY MARKET SURVEY

This section is intended to keep our readers informed of new and improved products. While every effort is made to include only reputable products, their presence here does not mean an official endorsement.

COOPER HEWITT

ULTRA VIOLET UNIT
Portable

All-purpose ultra violet laboratory unit has uses in the fields of spectroscopy, weathering, analysis, photo-chemistry, etc. This unit is built into a storage and carrying case. A mounting assembly allows adjustment of the lamp housing to any position in the vertical or horizontal plane. A double tiered filter holder is supplied with each unit to accomodate selective filters for fluorescence investigation or other special requirements. Cooper Hewitt Electric Co., 720-732 Grand St., Hoboken, N. J.

ALL-PURPOSE FOAM
For Alcohol and Oil Hazards

All-purpose foam is said to be effective against flammable liquid fires such as oil, gasoline, benzene, alcohol and water soluble solvents. It is reported that this foam has good stability and good adhesion to hot vertical surfaces.

For further details write to the Pyrene Manufacturing Co., 560 Belmont Ave., Newark 8, N.J.

DISPLACEMENT PUMP
Compressed Air-Operated

Pump is said to be purely pneumatic in action and has no rotating or reciprocating parts. Called "Ejectopump", it operates automatically when connected to any compressed air supply line and pumps the liquids to be handled in a series of regular suction and discharge strokes. The manufacturer claims that this unit can pump glycerine, latex paints, lacquers, varnishes, solvents, etc. For further details write to Ferro Corp., 4150 East 56th St., Cleveland 5, Ohio.

FERRO

PAINT INSECTICIDE
Odorless Powder

"Holowak NO. 333" is designed to kill insects such as roaches, flies, mosquitoes when properly mixed with ordinary paints, and is claimed by the manufacturer to be effective for at least the length of the life of the paint. This insecticide is an odorless powder that can be mixed with any type of water, oil or dry paint. Available in ½, 1 or 5 pound sizes as well as drums. Halioway Industrial Products Co., 550 Fifth Ave., New York 36,N. Y

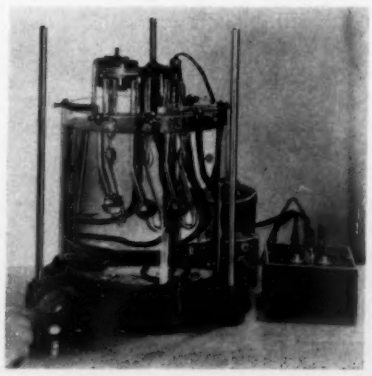
SYNTHETIC LATEX
Vinyl Type

Vinyl type, latexe mulsion resin vehicle is recommended for manufacturing rubber-base, "odorless", flat wall finishes. Known as "Wallpol", this resin can be dispersed in water to form a high solids emulsion, which when formulated into paint dries in 20 minutes, according to the manufacturer. Paints formulated with "Wallpol" are said to be elastic and non-cracking, resistant to abrasion, weak acids and alkalis. It is reported that the color stability feature of the new vehicle enables all shades from tints to deep tones to retain their original color without yellowing. Reichhold Chemicals, Inc., 630 Fifth Ave., New York, N.Y.

UNITIZED BATH SYSTEM
Varied Uses

Bath system combines heaters, stirrers, thermostats and other components to give the laboratory technician the bath capacity and control he desires. Temperature can be held constant from 20 deg. to 200 deg. C. range. This bath meets ASTM requirements for petroleum tests. Fisher Scientific Co., 717 Forbes St., Pittsburgh, Pa.

FISHER



NEW PRODUCTS

PROTECTOSEAL

TRANSFER PUMP
Fire Protective Type

Pump provides protection against explosion and fire hazards in the movement of hazardous liquids from receiving drums to containers, according to the manufacturer.

Three flame arrestors are built into the pump and are an integral part of it. These are placed at the exact points necessary to prevent an explosion of vapors, — at the spout, above the bung adaptor and at the strainer inlet within the drum. In addition, the pump provides for vent and pressure relief through protected openings. Every detail of design and construction has been engineered to secure complete safety for the operator as well as the building in which the transfer is made.

The pump is self-priming and is constructed of special aluminum alloy with a brass telescopic tube. It is attached to the drum by hand swivel grip connectors and the telescopic tube permits pumping from either the side or end opening of 30 gallon or 55 gallon drums. Pumping speed is 5 gallons per minute. It is claimed that this pump has been tested and approved by Underwriters' Laboratories, Inc., and Associated Factory Mutual Fire Insurance Companies. Protectoseal Company, 1920 So. Western Ave., Chicago 8, Illinois.

STYRENATED LINSEED
Combines with Other Oils

Drying oil based on linseed oil and styrene and known as Lindstyrol is able to combine with other drying oils, according to the manfacturer. It is completely miscible with ordinary refined drying oils and to some extent with heat-treated oils.

Drying time ranges from 15-20 hours, creating a hard, clear film. It is completely soluble in all types of solvents used in paints and varnishes. Spencer Kellogg and Sons Research Laboratory, 98 Delaware Ave., Buffalo, N.Y.

CERIUM NAPHTHENATE
Non-Staining Drier

Improved color in white coatings is one of the advantages of non-staining drier, Pure Cerium Naphthenate 6%, according to the manufacturer.

A technical report summarizes eight years of research on this metal and suggests that Pure Cerium 6% will be found especially useful as a drier of: 1) fume proof or air dry paints, where the utmost in initial color and color retention are desired; and 2) white baking enamels where the staining imparted by even low percentages of other driers is objectionable.

Although cerium has been recognized for some time as a drying catalyst, this product carries this metal in ceric form, which is the active oxidizing valence considered most effective in drying and polymerization performance.

Samples and copies of the technical report on cerium may be obtained by writing to Nuodex Products Co., Inc., Elizabeth F, New Jersey.

M.P. APPARATUS
Automatic

Melting point apparatus may be adaptable for temperature-optical transmission studies and automatic melting point determinations. Transmission and temperature of microscopic sample indicated or recorded continuously. Range, O-500 deg. C. American Instrument Co., Inc., Silver Spring, Maryland.

SAFFLOWER OIL
Available as Drying Oil

This oil exhibits lightness in color and good drying characteristics. Principal uses include production of high quality paints, varnishes, and enamels, and the synthesis of coating resins. Pacific Vegetable Oil Corp., 62 Townsend St., San Francisco, Calif.

CHANGE-CAN MIXER
Minimum of Maintenance

This mixer is designed for use where a number of different products are made by mixing directly in cans or drums, such as blending, thinning and tinting of paints, varnishes, etc.

The drive assembly (A) swings around the post(B), which is affixed to the floor and a wall or overhead beam. The unit can be positioned over any one of a number of cans while others are being moved or prepared. The height of the drive unit, and consequent agitator location, is adjusted through the hand crank (C) and gear track (D).

The removable turbine agitator (E), have pitched-blade impeller and peripheral speed are designed for fast and thorough mixing. This unit is coupled to the drive by inserting the shaft end (F) into the drive socket (G) and turning. A spring lock holds the two together. Disconnecting is accomplished by twisting and lowering. Industrial Process Engineers, 8 Lister Ave., Newark 5, N. J.

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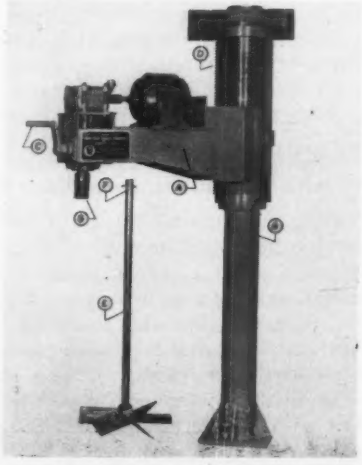
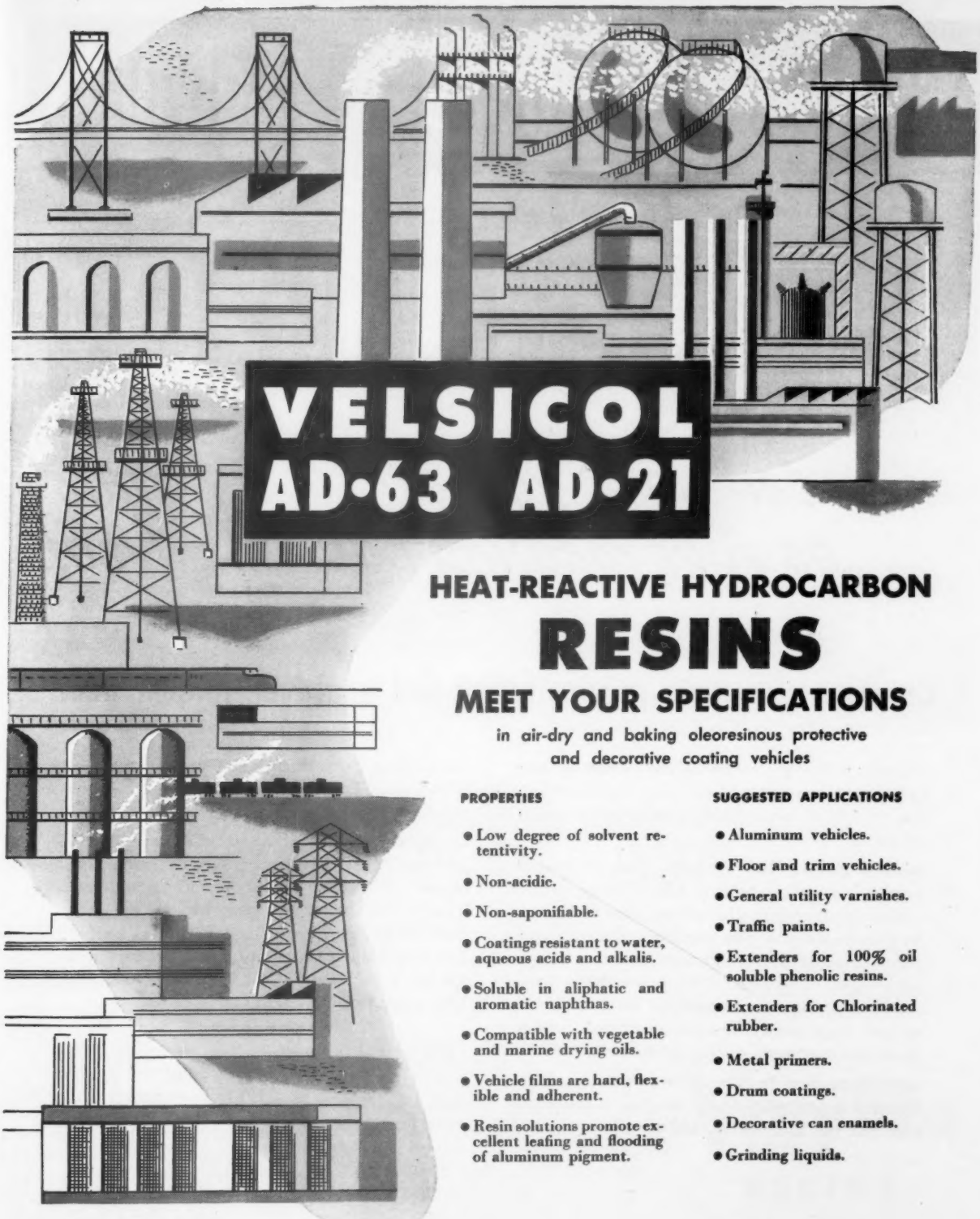




VELSICOL AD·63 AD·21

HEAT-REACTIVE HYDROCARBON RESINS

MEET YOUR SPECIFICATIONS

in air-dry and baking oleoresinous protective and decorative coating vehicles

PROPERTIES

- Low degree of solvent retentivity.
- Non-acidic.
- Non-saponifiable.
- Coatings resistant to water, aqueous acids and alkalis.
- Soluble in aliphatic and aromatic naphthas.
- Compatible with vegetable and marine drying oils.
- Vehicle films are hard, flexible and adherent.
- Resin solutions promote excellent leafing and flooding of aluminum pigment.

SUGGESTED APPLICATIONS

- Aluminum vehicles.
- Floor and trim vehicles.
- General utility varnishes.
- Traffic paints.
- Extenders for 100% oil soluble phenolic resins.
- Extenders for Chlorinated rubber.
- Metal primers.
- Drum coatings.
- Decorative can enamels.
- Grinding liquids.

WRITE FOR TECHNICAL BULLETINS

VELSICOL CORPORATION

General Offices and Laboratories
330 E. Grand Ave., Chicago 11, Ill.

Export Division
100 E. 42nd St., New York 17, New York

REPRESENTATIVES IN PRINCIPAL CITIES

Save with Celanese* Solvents

n-PROPYL ACETATE

can save you up to 6¢/gal. as your medium-boiling solvent

Gain superior resin compatibility and improved lacquer odor

Celanese n-Propyl Acetate is the newest of the Celanese Solvents that enable you to cut production costs while maintaining highest performance standards.

Medium boiling, low viscosity ester. N-Propyl Acetate is a medium boiling, low viscosity solvent with a pleasant odor and excellent blush resistance. As a low-cost replacement for other ester combinations of similar quality, it is saving lacquer manufacturers up to 6¢ a gallon on their finished product. Produced under controls that assure uniformity and high purity, Celanese n-Propyl Acetate gives you maximum quality at minimum cost.

Split shipments in compartmented cars. Your Celanese representative will be glad to show you how you can now realize additional savings and convenience through split shipments of Celanese Solvents in compartmented tank cars and wagons at lowest bulk prices.

Celanese Product Evaluation Laboratory. Use the facilities of the Celanese Product Evaluation Laboratory to check n-Propyl Acetate in your own formulation against any series of tests you designate. Write for samples and Technical Bulletin N-29, to Celanese Corporation of America, Chemical Division, Dept. 558-L, 180 Madison Avenue, New York 16, N. Y.

PROPERTIES

Color	15 APHA
Spec. Grav.	0.880 - 0.885 @ 20/20°C
Boil. Pt.	95°C - 103°C
Ester Content	90% - 92%

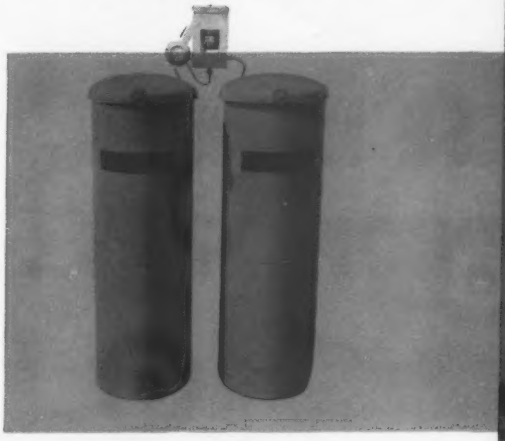
OTHER SOLVENTS BY CELANESE

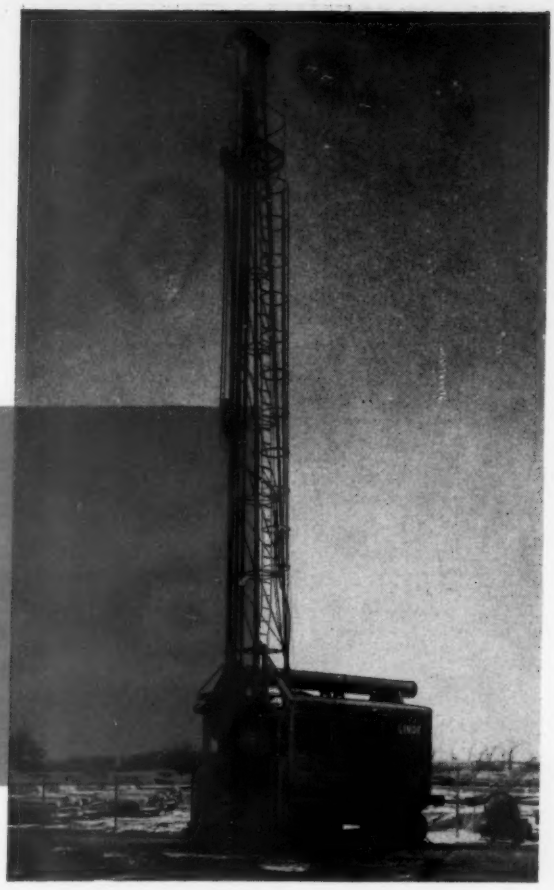
Solvent 203	Solvent 301
Solvent 601	Solvent 901
n-Propanol	Isobutanol

Celanese* CHEMICALS

*Reg. U. S. Pat. Off.

Where **SURFACE PROTECTION** is a problem . . .





FROM BOTTLED GAS INSTALLATION TO ROCK-PIERCING JET

the answer is coatings made with VINYLITE BRAND RESINS

These PYROFAX gas cylinder domes are exposed to year-round weather. In certain coastal areas, ordinary paints covering them disappear in three months. New coatings, based on a primer of VINYLITE Brand Resins, an intermediate coat and a finish coat, have been intact for *two years!*

The LINDE JPM-3 jet-piercing machine shoots a kerosene-oxygen flame that penetrates 30 feet of rock an hour to make blast holes for iron mining. It's exposed to weather, temperature extremes, moisture, flying stone particles, corrosive fumes . . . But coatings based on VINYLITE Brand Resins keep it safe.

Wherever surface protection is a problem—indoors or out—there's a job for coatings based on VINYLITE Resins. Oil refineries, chemical plants, pipe lines, barges, dairies and railroads are only a part of this huge market. And you can get a big share of it by formulating *your* paints with VINYLITE Resins for peak service.

Properly applied by competent contractors, such coatings give peak service under the toughest conditions. They stick fast to metal, concrete or masonry...won't chip, crack, peel or fade with use. They have a wide range of colors. They're extremely inert, odorless and tasteless, excellent for packaging applications.

You'll get bigger, more profitable jobs by offering the bigger savings that these coatings bring. They have the unique properties that make VINYLITE Resins and Plastics so useful throughout defense and basic industry. Write Dept. NL-75

Data courtesy Stanley Chemical Co., East Berlin, Conn.

News about

B. F. Goodrich Chemical *raw materials*

Solvent and oil resistance

Abrasion resistance

Compatibility with wide variety of synthetic resins

Excellent pigment binder

THESE HYCAR LATEX PROPERTIES...

Adhesive properties

Heat resistance

Non-tacky

may give you ideas for paint formulations

Hycar latex is used as a pigment binder in many fields—has properties that you may find useful in developing or improving paint formulations. Check over Hycar's advantages. They may give you ideas —and we'll be glad to help with information about Hycar latices. Write Dept. HS-12, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio.
Cable address: Goodchemco.
In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Hycar
American Rubber

GEON polyvinyl materials • **HYCAR** American rubber • **GOOD-RITE** chemicals and plasticizers • **HARMON** organic colors

Personnel Changes

SCHENECTADY VARNISH

Dr. John F. Meyer has been appointed research director. From 1936 to 1941, he was assistant instructor in organic chemistry at the University of Pennsylvania. In 1941 he became assistant professor of Organic Chemistry at Clarkson College of Technology in New York State. He left there in 1944 to join the Schenectady Varnish Company. Dr. Meyer is a graduate of the University of Pennsylvania where he received a B.S. in Chemistry in 1936, a M.S. in Chemistry in 1940 and a Ph.D. in Chemistry in 1942.

Dr. J. F. Meyer

GLYCO

Gerald J. Leuck, technical director, has resigned to enter the consulting field. He has been appointed special research consultant for the Glyco Products Company, Inc., Natrium (New Martinsville), West Virginia. Mr. Leuck was formerly associated with the Corn Products Refining Company, Miner Laboratories and the Quaker Oats Company.

SINDAR

R. E. Vicklund has been appointed manager of sales and development. Mr. Vicklund joined the firm in 1950 as a technical representative. Prior to his present appointment, he was Chief of the Fungus Control Section of Engineer Research and Development Laboratories, where he supervised the development and research program on the deterioration and preservation of textiles, paints, rubber, plastics, and other material. Mr. Vicklund graduated from the Michigan College of Mining and Technology with a B.S. degree in chemical engineering.

G-E

Robert H. Krieble has been appointed manager of engineering for the chemical materials department. Dr. Krieble joined the G-E Research Laboratory at Schenectady in 1943, participating in the development of silicones. In 1949 he was named engineer of the Thomson Laboratory in the Lynn, Mass., River Works. Dr. Krieble began his career with the Socony Vacuum Oil Company.

ALLIED

Dr. W. E. Kleinicke has been appointed superintendent of the Barrett Division's Shadyside Research Laboratory, succeeding Mr. D. A. Rankin, deceased. Dr. Kleinicke has been associated with Barrett for approximately five years. He was previously director of research for the Johnson-March Corporation of Long Island City, N. Y. The Shadyside Research Laboratory is in Edgewater, N.J.

NPA

Thomas C. Keeling, Jr. has been appointed Deputy Director of the Chemical Division of the NPA. Mr. Keeling is on leave from his position as assistant vice-president and sales manager of the Chemical Division of the Koppers, Inc., of Pittsburgh where he has been employed since 1945. He began his career with the Niagara Alkali Co., of NewYork City in 1935.

GLYCO PRODUCTS

Dr. Herbert Fineberg has been promoted to the position of director of research with headquarters at Williamsport, Pa. He joined the firm in 1948. Dr. Fineberg had previously been with the Eastman Kodak Co., as a research chemist,, chief chemist for the Connecticut Hard Rubber Co., and director of the Geral Chemical Company.

NATIONAL STARCH

Dr. Carlyle G. Caldwell has been elected an assistant vice president. He joined the firm's research staff in 1940, and since 1948 had been research director. Dr. Caldwell graduated from Iowa State College in 1936, and received a PhD degree in chemistry from the same institution in 1940. He is well-informed on starches, adhesives and resins, and is an author and co-author of many of National's significant patents.

Dr. C. G. Caldwell

DU PONT

William T. Banning, until recently Atlanta regional sales manager of the Finishes Division, has retired after thirty-seven years with the company. Mr. Banning was Atlanta regional sales manager from 1940 until last August when he was succeeded by Charles P. Culp. Since then he has been in an advisory capacity in the Finishes Division. Mr. Banning joined Du Pont in 1915 as a time clerk at the company's Carney's Point, N. J., explosives plant. He advanced through various positions in explosives, sales, and finishes, until 1928, when he became trade sales manager of the Finishes Division in Boston. He was transferred to Atlanta as trade sales manager in 1932.

AMERICAN CYANAMID

Carl Byron has been appointed Midwest Sales Manager of the Coating Resins Department. He will supervise coating resin sales in the firm's Chicago and Cleveland Districts. Included in this sales territory are Colorado, Kansas, Missouri, Indiana, Illinois, Ohio, Iowa, Minnesota, Wisconsin, and parts of New York, Pennsylvania, Tennessee and West Virginia. Prior to his recent appointment, Mr. Byron served as Cleveland District Manager of Cyanamid's Industrial Chemicals Division. He will continue to operate from the company's Cleveland District Office.

Carl Bryan

AMERICAN MINERAL

Fred B. Loeffler has been elected vice president of American Mineral Spirits Company, Western in Los Angeles. He will continue to reside in New York City where he is in the firm's Solvent Department. Mr. Loeffler's new duties will entail the correlating of the interests of Amsco Western between the east and west Coasts. Mr. Loeffler joined American Mineral Spirits Company in New York since 1948. Prior to coming with Amsco, he was associated with Gulf Oil Corporation for fourteen years.

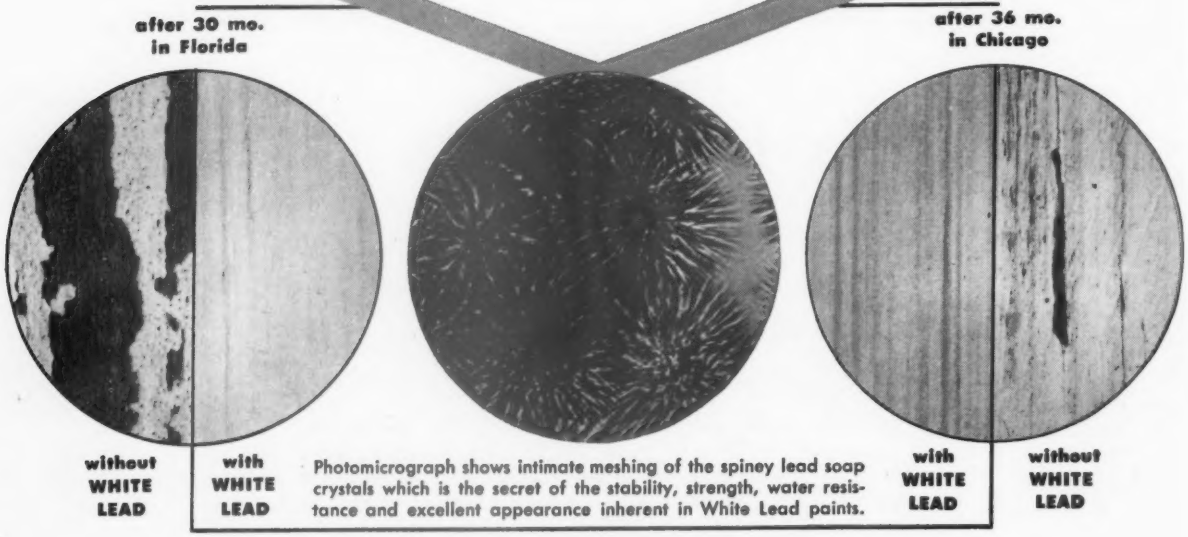
F. B. Loeffler

REICHHOLD CHEMICALS

Robert Gow has been named sales manager of the firm's newly created Textile Division, with offices at Charlotte, N.C. Prior to joining the Reichhold organization, Gow was engaged in sales department of synthetic resins for textile finishing and sizing with Monsanto Chemical Co. for seven years. Before his wartime service with the Army Air Force, he was associated with Lanett Bleachery and Dyeworks, West Point, Ga. He is a member of the American Chemical Society and the American Association of Textile Chemists and Colorists.

Robert Gow

Here's proof that WHITE LEAD improves house paints



Photomicrograph shows intimate meshing of the spiney lead soap crystals which is the secret of the stability, strength, water resistance and excellent appearance inherent in White Lead paints.

4 sure benefits with WHITE LEAD

1 STABILITY...Oxidation takes its toll in house paint; acids which are formed liquify or soften the paint. Active lead pigments neutralize these products of decomposition and form stable insoluble lead salts. Durability in mixed pigment house paints is assured with White Lead.

2 PLASTIC STRENGTH...Paint forms a plastic coating which becomes hard, brittle and inflexible if it does not contain a plasticizer. Such paint will crack under normal stresses, spoiling its appearance and reducing its protective value. Lead soaps act as stable plasticizers which maintain flexibility. Long-lasting plasticity is assured with White Lead.

3 WATER RESISTANCE...Water causes ordinary paint to dissolve and emulsify, causing swelling, softening and excessive chalking. Paints containing lead pigments are highly resistant to water, they absorb only a fraction as much water as non-lead paints. Better water resistance, less erosion and controlled chalking are assured with White Lead.

4 BETTER APPEARANCE...Lead in house paints provides smart initial appearance, which lasts longer than paints containing no lead. All the advantages inherent in White Lead paints contribute to this better appearance. When the paint contains White Lead, the stamp of a good paint job on any house will be evident long after ordinary paints fail.

Long-life protection with WHITE LEAD

WHITE LEAD has become to paint what Sterling means to silver. To people who know the lasting qualities of White Lead paint, a mere mention of the White Lead content on your label will gain quick acceptance of its quality. Experience and repeated emphasis over the years have established White Lead as the best guarantee of paint quality. Be sure to tie your product to White Lead, be sure to recommend paint containing White Lead.

1876

Lead Industries Association
420 Lexington Ave., New York 17, N. Y.

D. H. LITTER

Morris Coffino has been appointed chief chemist in the technical service laboratory. Mr. Coffino was formerly associated with the Basic Varnish & Research Corporation of Brooklyn, N. Y. He has had eleven years of diversified experience in paint and varnish technology. He received his B.S. degree in Chemistry at C.C.N.Y. and took his post graduate studies at Brooklyn Polytechnic Institute of Technology, where he majored in high polymer chemistry.

Morris Coffino

CANCO

Donald B. Kipp has been elected a director. Mr. Kipp, a member of the Law firm of Pitney, Hardin & Wood, of Newark, N. J., is also a director of the American Colortype Company, the American Insurance Company and the Bankers Indemnity Company.

George F. Henschel has been appointed manager of sales for the company's Atlantic Division succeeding B. R. Wood who has been named assistant general manager of Canco's gereral purchasing department. Mr. Henschel joined the firm 22 years ago as an inspector at the company's Philadelphia factory. Since then he has held the following positions: sales representative, New York office; assistant district sales manager in Rochester, N. Y.; district sales manager in Philadelphia; head of the Atlantic Division's non-food can sales; assistant manager of sales for the Division, and most recently manager of the Beer Division.

CALBAR PAINT

John Williams, Jr., has just been appointed Chief Chemist, according to an announcement from V. E. Dewees, vice-president of the company. Mr. Williams has been associated for the past nineteen with various branches of the paint industry, having been connected with the E. I. Du Pont de Nemours & Company for fourteen years in their Research and Sales Service Laboratories, and more recently with the Thomson-Porcelite Paint Co. of Philadelphia, Penna. Calbar manufactures technical paints and was established in 1920.

John Williams Jr.

CABOT

Thomas D. Cabot, vice chairman of the board of directors and executive vice president, was elected a board member of the National Industrial Conference Board for a term of one year at the 334th meeting of the Board held October 23, at the Waldorf-Astoria Hotel, New York. Mr. Cabot was formerly a board member from 1946-1951. He served as Director for International Security Affairs in the Office of the United States Department of State in 1951, resigning in October of the same year.

BRAZIL OITICICA

H. L. Blachford, Limited, have been appointed exclusive sales agents for Canada. The firm has offices at 977 Aqueduct St., Montreal 3, Quebec, and 22 College St., Toronto 2, Ontario.

CELANESE

G. W. Seymour has been named to the newly established corporation post of co-ordinator of process and technical control. In his new position, Mr. Seymour, will be responsible for co-ordinating and maintaining liasison among the corporation's three operating divisions — Textile, Plastic and Chemical — and affilitated companies in Canada and Latin America on all matters pertaining to process and technical control.

Dr. B. B. Allen has been appointed manager of the Summit, New Jersey, research laboratories. Previously he had been associate director of the laboratories.

Cottonseed FATTY ACIDS

GROCO 35 is a double distilled cottonseed fatty acid, recommended for alkyd resin manufacture because of its exceptionally light color. Specifications are as follows.

Titre	36°-39C°
Color Lovibond 5¼" Red	1.0-2.0
Color Lovibond 5¼" Yellow	5-15
Color Gardner 1933	1- 3
Unsaponifiable	1.5% Max.
Saponification Value	201-206
Acid Value	200-205
Iodine Value (WIJS)	90-100

Write today for your samples and a copy of our booklet "Fatty Acids in Modern Industry."

A. GROSS & COMPANY

A. GROSS & Company

295 MADISON AVENUE, NEW YORK 17, N. Y.

FACTORY: NEWARK, NEW JERSEY

MANUFACTURERS SINCE 1837

DISTRIBUTORS IN PRINCIPAL CITIES

MONROE SANDER

W. E. Santore has been appointed head of the research division. He was formerly associated with the Standard-Toch Chemical Company of Staten Island. Mr. Santoro, widely known in his field, is a member of the American Chemical Society, American Oil Chemists Society for Testing Materials, Federation of Paint and Varnish Production Clubs, and the New York Paint and Varnish Production Clubs, and the New York Paint and Varnish Production Clubs. In addition, he is a Charter Member of The Forest Products Research Society and a Fellow of the American Institute of Chemists.

W. E. Santoro

METALS DISINTEGRATING

Philip C. King has been appointed Purchasing Agent. He was previously associated with General Aniline Works, Inc., as a purchasing agent for engineering, and prior to this position he held a similar position with the Condenser Service & Engineering Co., Hoboken, N.J. In addition, Mr. King worked for a number of years as purchasing agent for the Vanadium Corporation of America, and for a period operated his own business, the Steel Trading Corporation, of Pittsburgh.

P. C. King

SHERWIN-WILLIAMS

Francis P. Squibb has been named assistant general manager of the Pigment Chemical and Color Division. He was formerly western manager of the division. Mr. Squibb joined Sherwin-Williams shortly after graduating from college. He served in various capacities with the paint manufacturing firm before assuming the western manager post in 1936. He will make his headquarters in Chicago, continuing as western manager in addition to serving in his new position.

F. P. Squibb

BENJAMIN MOORE

M. R. Wingfield has been appointed corporation sales manager. **W. V. Stein** has been appointed sales manager of the New York Branch. **F. O. Gregory** has been appointed Assistant sales manager of the New York Branch. **C. H. Messerve** has been appointed manager of the Carteret branch. **L. A. Payne** has been appointed assistant manager of the Carteret branch. **H. J. Shea** has been appointed Assistant manager of the Cleveland branch. **H. D. Rasmusson** has been appointed assistant manager of the Chicago branch.

ATLAS MINERAL

Martin H. Smith has joined the Technical Service Department. He was formerly associated with the Hercules Powder Company.

PITTSBURGH GLASS PAINT

Paul D. Kaley has been named district sales manager of the firm's new Fiber Glass Division in New York with headquarters at 30 Rockefeller Plaza. He has been associated with the Fiber Glass industry since 1941.

H. J. Bygott, Jr. has been appointed Washington district sales manager of Pittsburgh Plate's Fiber Glass Division with headquarters at 1545 New York Ave., N.E. He has been associated with the company since 1935.

Pittsburgh Plate Glass Company's first Fiber Glass plant recently commenced production at Shelbyville, Indiana.

FEDERATION . . .

(From page 38)

by placing a pipe between the rolls (the pipe's length being the same as those of the rolls).

Club Papers

"Factors Affecting the Heat Thickening of Linseed Oil" — Dr. Albert J. Seavell and Dr. John J. Sleightholme, of the Oil & Colour Chemists' Association. Presented by Leslie O. Kekwick, President of the Oil & Colour Chemists' Association.

The effects of the type of vessel, access of air, blowing with inert gas, use of vacuum, stirring and loss in weight, on the rate of thickening of linseed oil have been studied on a laboratory scale. Access of air has by far the greatest influence on the rate of polymerization and accounts for the more rapid thickening in open vessels; it also causes some darkening in color. None of the other factors has any significant effect on the thickening rate.

"Instrumentation for Continuously Recording Viscosity of Resins and Polymers in Large Reactors at Processing Temperatures" — Chicago Club. (Technical Committee: D. T. Woods, Chairman, J. A. Arvin, R. Giels, and L. Tavis

The resin, high polymer and varnish industries are now producing batches of several ton quantities in highly specialized reactors. This progress in methods of manufacture has developed a great need for an instrument to indicate polymer size or viscosity. Present methods require fifteen minutes to test extent of polymerization and in many instances the polymer may go to the insoluble and infusible stage before the test for previously determined end point of polymerization is completed.

Several instruments designed to determine viscosity continuously for industrial processes control have been studied. The original design of most of these control instruments was not engineered to be placed in high temperature molten resins in large rugged reactors. However, with some slight changes, one type was found to be quite satisfactory. It is possible for operators of large resin reactors to trace the polymer size continuously to the completion of the process, and to be able to detect any unusually rapid polymerization, which might become a jell before corrective measures could be taken.

"A Study of Factors Affecting Heat Resistant Coatings" — Houston Club. (Technical Committee: J. E. Rench, Chairman, H. L. Crawford, W. K. Davis, W. Johnston, O. Nelson, L. B. Odell, H. C. Owens, M. W. Prout, C. P. Schlesinger, and E. A. Shawd

This paper lists as its purpose, "to evaluate and standardize equipment suited for testing heat resistant coatings and to develop a study of some of the factors which affect heat resistance and durability." Included in this paper are specifications for the pipe stand apparatus and a proven procedure of testing and evaluating heat resistant coatings. Studies are reported on pigment volume concentration, pigmentation, vehicle solids and film thickness, and their relationship to heat resistance and durability. The most satisfactory coating found in this investigation was a silicone zinc-dust — zinc oxide coating possessing a relatively high PVC.

"The Effect of Protein Dispersion on Freeze-Thaw Stability of Latex Emulsion" — Northwestern Club. (Technical Committee: J. B. Kenny, Chairman, J. A. Eriksen, J. D. Knutson, H. G. Koval, and F. Nelson

This project is a study of the effect of five different protein dispersions on the freeze-thaw stability of five different latex emulsions. The per cent of protein dispersion on the latex solids of the unpigmented latex emulsions required to give freeze-thaw stability was determined. After this per cent of protein dispersion was determined, a latex emulsion paint was prepared using as vehicle solids this combination of latex solids and protein solids. These paints were then evaluated for package condition, brushing, washability, and dirt removal using as controls two commercial latex paints. Charts and graphs giving the data found in this study are included in the report.

"A Study of Pigment Dispersion: IV" — New York Club. (Subcommittee 53: E. K. Zimmermann, Chairman, J. J. Clark, J. S. Congleton, H. E. Hillman, L. A. Melsheimer, A. Skett, and R. L. Whitney. Collaborators: R. P. Bunker, W. H. Hoback, and M. C. Londergan)

This paper is a continuation of the paste mixing-roller mill grinding and pebble mill grinding investigation of some of the problems involved in paint dispersion.

The importance of the solvent portion as a constituent in the dispersion process is studied with the specific objective of determining in what manner the thinner of the simple system of titanium dioxide-alkyd resin-mineral spirits can be modified in small amounts to (1) improve the dispersive properties of the alkyd resin solution, (2) raise the solids content of the alkyd resin solution for mix and roller mill grind without increasing the practical working viscosity and (3) improve the dispersion obtained by various mechanical procedures, under the same conditions of operation.

Solvent additives having mild odor and high solvency with boiling ranges and vapor pressures reasonably approaching mineral spirits are investigated.

The mono-ether alcohol, cellosolve, is the only solvent modifier of the five studied which shows effectiveness in gaining the objectives mentioned above in roller mill grinds.

Using the low solids pebble mill technique or grinding the full formula, cellosolve is relatively ineffective in pebble mill dispersion because of the high dilution with a less active type of solvent.

"Permeability to Water of Thin Films of Pure Compounds" — B. L. Harris and A. Bialecki, of the Johns Hopkins University

Water vapor and liquid permeability tests were run in Payne cups on unsupported films of the pure compounds of drying oils and alkyds under the Federation program. It was found that the more unsaturated the oil the less the vapor permeability. Liquid permeability was in the neighborhood of one-third the vapor permeability. These data are discussed in terms of a new theory of permeability.

"Painting of Plaster Surfaces: I" — Cleveland Club. (Plaster Research Committee: A. J. Wandersleben, Chairman, E. G. Bobalek, P. Brown, B. Burge, W. Burr, J. DiCello, B. Evans, J. Gage, H. Haberfeld, R. F. Hall, P. Herzog, S. Levinson, P. Matvey, J. Morasky, L. Schaefer, C. Stout, and D. Wagner)

This is a progress report of the work that has been accomplished by the Plaster Research Committee. After a thorough literature search on the subject of painting of plaster, which is included in the paper as a bibliography, the committee decided that their first job was to develop a suitable test procedure for carrying out the objective. A suitable test has been developed and is described thoroughly in the paper. This test employs a painted plaster disc subjected to a solution of sodium hydroxide.

Nine different types of paints have been tried with this test and the results to date given. Other ideas which were tried during the process of the development of this test are also mentioned. In developing the test, two important facts were brought out: namely, (1) Type S lime is far superior and will cause less paint failures than the Type N lime most commonly used in practice today, and (2) the work of Llewellyn has been verified, that many of the failures of paint on plaster can be traced not to the lime present but to the additives which are incorporated, mainly the sodium and potassium ions which may be formed.

"Relationship of Plant and Finished Product Warehouse Capacity" — New England Club. (Plant Managers Committee: R. W. George, Chairman, H. S. Ellsworth, W. R. Holmes, P. J. Roberts, H. B. Twombly, and J. S. Ward

This paper, essentially non-technical, points out that sometimes plant equipment is purchased on the basis of what is nice rather than necessary and that warehouses are apt to receive too little study. There must be a correct size relationship between plant and warehouse capacity for most profitable operations and some of the fundamentals of the relationships are discussed.

Color Symposium Featuring the Color Aptitude Test. Introduction by P. O. Blackmore. Address by Dr. F. L. Dimmick and C. E. Foss

The improved production of dyes and pigments in almost unlimited range, coupled with the increased utilization of the capacity of the eye to see fine gradations of color, has presented many industries with severe problems of color control. Trained human eyes are used widely to give judgments of acceptance or rejection to colored products in wide variety. Color discrimination of the average individual is so good that tolerance limits are small, and industry needs the very best discriminators to maintain conformity to standards. The Color Apitude Test is designed to discover individuals whose color discrimination is better than average and who, therefore, will reject unsatisfactory matches more critically than most people. It accomplishes this by requiring each subject to make a succession of matches under standard and controlled conditions of illumination, position and order. Tentative standards will be established from the matches of a hundred suojects and scores assigned accordingly. Validation of the test for a particular color job will be undertaken upon request and with the cooperation of the industries concerned. The story will be told of how the test grew, and of what its applications may be.

"Comparison of Representative Latex-Emulsion and Oleoresinous Flat Wall Paints" — Baltimore Club. (Technical Committee: R. L. McGill, Chairman, A. J. Bruning, L. H. Cohan, T. J. Grumbine, and O. J. Hinz

This project was undertaken to furnish an objective report on the conparative qualities of latex emulsion and oleoresinous flat wall finishes. It is not intended as a generalization of all that the comparative finishes may have achieved or will achieve, but rather a specific comparison of finishes that are readily available to the ultimate consumer. Two leading commercial brands of latex emulsion paint and two well-known brands of oleoresinous flat finish were procured for tests. In addition, two samples of recommended formulae of latex emulsion paint from raw material suppliers and a sample of alkyd flat finish on a recommended formula of a raw material supplier were included. All samples of paints formulated by raw material suppliers were made by the raw material suppliers to assure correct handling in manufacture of each. All samples were procured in white and deep green making a total of 14 paints tested. The main points of comparison were those of greatest interest in the actual use of the finishes: application, hiding, adhesion, washability, and stability.

"Quick Specific Qualitive Tests for Determination of Characteristic Components in Vehicles or Synthetic Resins" — CDIC Club. (Technical Committee: F. Petke, Chairman, D. Moore, C. J. Opp, and G. Schutte)

From the very beginning this will be a series of demonstrations starting with the introduction and following with:

(1) Specific test for amine (NH_2) containing type resins.

(2) Beilstein's test for halogenated resins.

(3) Sublimation test as applied to alkyds. Confirmatory test for phthalic anhydride.

(4) Test for nitrocellulose base lacquer.

(5) Use of saponification-values as an approach to identifying the newer type vehicles such as styrenated alkyds, Epon resins, and Epon esters.

(6) Test for polymerization catalysts: (a) oxanthrol test for beta methyl anthraquinone (b) test for benzoyl peroxide.

Portable type burners, test tubes, flasks, beakers, and slides will be used.

"Comparative Effect of Oil Acidity and Resin Acidity in Aluminum Vehicles" — Pittsburgh Club. (Technical Committee: C. N. Beck, Chairman, J. S. Coulter, J. P. Garvey, A. N. Laubscher, C. E. Wilson, and R. I. Wray)

Aluminum paints prepared by mixing two pounds aluminum lining paste per gallon of each vehicle were packaged and examined after periods of two weeks, one month, five weeks, six weeks and two months. Vehicles were prepared by blending high and low acid kettled oils with high and low acid resins, followed by reduction to uniform viscosity with a blend of high flash naphtha with mineral spirits.

No appreciable pressure developed in any paint over the two month storage. No creepage was shown on any container at elevated temperatures. In general, acidity of resin had little effect on leafing or leaf retention, while low acid oil vehicles showed high leafing and leaf retention, and high acid oil vehicles showed poor leafing and leaf retention.

"Testing of Amino Resins for Stoving Finishes" — Birmingham Club. (Technical Committee: J. N. Hitchin, Chairman, F. G. Joyner, E. C. Mulford, F. Schollick, E. S. Tonks, and D. E. Yates)

The paper recommends methods of testing amino resins and of clear and pigmented films prepared from combinations of these with drying and non-drying alkyds in various proportions. Where a number of testing methods are currently in use, the reasons for selecting the procedure advocated are stated.

The practice of arranging a pre-selected series of tests into a standard scheme — adopted in previous papers by the Club — has been abandoned as incompatible with the requirements of industry; all normal types of test are reviewed, the selection of those put into operation being left to the individual.

"Dry Hiding Power of Paints: II" — New York Club. (Subcommittee 40: E. J. Dunn, Jr., Chairman, E. H. Baier, E. C. Botti, A. MacDonald, L. A. Melsheimer, E. R. Stacy, S. Werthan, and R. L. Whitney)

Subcommittee 40 has conducted cooperative hiding power measurements on five paints using the Federation method. This work has shown that the method is reproducible for complete hiding power determinations within .5%. The cooperative work has also shown that the method is applicable to paints of low hiding power and low reflection, varying from 10 to 40% reflection and having marked chromaticity.

Curves are presented to show the reproducibility obtained in one laboratory as compared to the reproducibility obtained amongst different laboratories. Errors that affect the method most pronouncedly are discussed and some suggestions given for aiding the test procedure. It is hoped that the continuation of this cooperative work on hiding power will develop a semi-quantitative hiding power test that will be rapid and correlate with the longer but more accurate Federation method.

PATENTS

Conducted by

Lancaster, Allwine & Rommel

PATENTS AND COPYRIGHTS

424 Bowen Building,
Washington, D. C.

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ORGANIC PIGMENTS IN FINELY DIVIDED FORM

U. S. Patent 2,611,771. Donald E. Marnon, Phillipsburg, N. J., assignor to General Aniline & Film Corporation-New York, a corporation of Delaware.

In the process of preparing water, insoluble organic pigments in an extremely finely divided form by drowning a solution of the organic pigment in an aqueous liquid in which the pigment is insoluble, the improvement which comprises carrying out the drowning by forcing the solution of the organic pigment as a thin sheet into and wholly within a stationary to laminarly flowing body of the aqueous liquid, the sheet of pigment solution moving at a speed such that there is set up between the two bodies of liquid at the interface therebetween, a system of relative motion in which, relative to the sheet of pigment solution, the aqueous liquid is moving at a speed greater than its critical velocity and in a state of turbulent flow.

ABRASION RESISTANT WIRE ENAMELS

U. S. Patent 2,615,001. Edgar Q. Bullock, Jr. and Fred J. Emig, Chicago, Ill., assignors to E. I. duPont deNemours & Company, Wilmington, Del., a corporation of Delaware.

A wire enamel comprising in parts by weight a compatible mixture of one part of a heat-hardenable soluble phenol-formaldehyder esin, from 1 to 19 parts of a polyvinyl formal resin and from 0.1% to 0.5% of a polymer of ethylene based on the resin solids of the composition, the said polymer of ethylene being solid at room temperature with a structural formula of $(CH_2)\ x$ and showing a crystalline structure by X-ray diffraction.

TREATMENT OF GLYCERIDE OILS

U. S. Patent 2,613,215. Karl F. Mattil, Chicago, Ill., assignor to Swift & Company, Chicago, Ill., a corporation of Illinois.

The process of producing a relatively nonreverting glyceride oil from a reverting glyceride oil, which comprises hydrogenating said reverting oil containing unsaponifiable matter to reduce the iodine value of the said oil by about 4 to 20 points, subjecting the partially hydrogenated oil containing the unsaponifiable fraction in an unoxidized state to a fractionation operation in the presence of a liquefied normally gaseous hydrocarbon solvent under temperature conditions whereby the resulting solution separates into two phases, one phase being rich in unoxidized unsaponifiable matter and another phase being relatively rich in nonreverting glyceride oil, and separating said phases.

MODIFICATION OF DRYING OILS

U. S. Patent 2,611,788. Herman S. Bloch, Chicago, Ill., assignor to Xniversal Oil Products Company, Chicago, Ill., a corporation of Delaware.

A process for modifying a drying oil comprising a mixture of hydrocarbon conjunct polymers containing polyolefinic, cyclic hydrocarbons having conjugated and non-conjugated unsaturation, which comprises reacting the drying oil with an aliphatic monoolefinic hydrocarbon at a temperature of from about 50° C. to about 300° C.

NEW STUDY POINTS WAY TO BETTER PAINTS, PROFITS WITH SAFFLOWER OIL

Here's complete, new information on the characteristics of Safflower oil . . . detailed facts that can help you in your search for better protective coatings at lower cost. Write today for PVO's new 35-page booklet on Safflower Oil's properties and applications in protective coatings.

Key to Safflower oil's superior properties is the type and proportion of fatty acids shown below:

Highest chemical purity in its class

Low content means more thorough drying

	Safflower	Linseed	Soy
% Saturated acids	6.6	9.6	13.2
% Oleic Acid	16.4	20.1	30.2
% Linoleic Acid	76.7	19.5	51.2
% Linolenic Acid	0.3	50.8	5.4

Means excellent color retention and non-yellowing properties.

Have you looked at kettle-bodied and non-break Safflower oils as low-cost, high-quality vehicles for use in exterior finishes? PVO's new study shows why Safflower has shown excellent durability and flexibility.

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Ask your local PVO representative or write direct to the factory for your free copy of the new study on Safflower oil.

62 Townsend Street
San Francisco 7, California

PIGMENT COMPOSITION

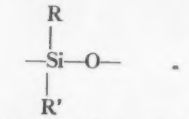
U. S. Patent 2,613,158. William T. Walton, Chicago, Ill., and Arthur B. Holton, Bay Village, Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio, a corporation of Ohio.

A granular color concentrate useful to change the coloration of a liquid paint system in a uniform manner through manual incorporation therein which comprises a pigmented resin, dry-powdered, the pigmentary portion selected from the group consisting of phthalocyanine blue and lampblack having an average particle diameter of from 0.08 to 0.2 micron, dispersed in a resin friable at 20° C. but plastic at elevated temperatures and soluble in oleoresinous varnishes, said pigment constituting from 10% to not more than 35% by weight of the total pigment-in-resin dispersion, and said solid concentrate classified in particle size to pass through a 40 mesh screen and be retained on a 200 mesh screen.

PIGMENTARY MATERIALS

U. S. Patent 2,615,006. Frank W. Lane, Newport, Del., assignor to E. I. duPont deNemours & Company, Wilmington, Del., a corporation of Delaware.

A process for improving the gloss and wettability properties of a white, calcined, hydrophilic inorganic pigment to be employed in an oleoresinous and gloss emulsion type coating composition which comprises converting said pigment to hydrophobic form by mixing with said pigment prior to employment in the coating composition from about 0.05% to 5% by weight, on the pigment basis, of a halogen-free silicone polymeric compound having the unit structure



wherein R and R^1 are hydrophobic organic hydrocarbon radicals, and milling the resulting mixture in an atmosphere of superheated steam in a fluid energy mill.

POLISHING COMPOSITION

U. S. Patent 2,614,049. Ralph G. Swanson, Flint, Mich., assignor to E. I. duPont deNemours & Company, Wilmington, Del., a corporation of Delaware.

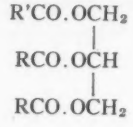
A polishing composition having the following formula in parts by weight:

Beeswax	0.9
Microcrystalline wax	1.5
Magnesium oxide	1.5
Polysiloxane	3.0
Aluminum stearate	1.2
Naphtha B. R. 140° C.-200° C	91.9
	100.0

WAXY TRIGLYCERIDES

U. S. Patent 2,615,159. Frank L. Jackson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio, a corporation of Ohio.

A triglyceride of the formula



wherein $R^1CO.$ is the acyl radical of a fatty acid of 12 to 22 carbon atoms and each RCO. is selected from the group consisting of acetyl, propionyl and butyryl radicals, said triglyceride being in a waxy translucent alpha crystalline form as determinable by melting point and X-ray diffraction measurements.

DEVELOPMENTS —

(*From page 29*)

accumulated after a new product goes into production frequently bears no charge at all, but is absorbed as a manufacturing expense. Lack of data may result in the original product being rather inferior to what actually could be made, and will be made in the near future; this being due to a difference in bookkeeping practice in which case data is not developed before but after production.

It is easy to guess and to work from guesses. In the long run it is expensive. It is difficult and troubleseome to find the facts; but inexpensive in the long pull. But a non-realistic costing system can make intelligent facts look expensive. This means that Development departments are often confronted with the problem of making a decision on the potentialities of a project without having enough knowledge of the situation at hand. A conservative decision may mean the end of project which is in reality sound, while an optimistic outlook may mean that insufficient resources will be brought to bear on a project. Considerable effort is required on the part of research and development groups to convey the idea to various levels of management that data as well as products is the result of work and is often very expensive.

There is a ratio in any company between the amount of effort needed to carry on the business of the day and the amount of effort expended toward getting additional business in the future.

There is also a natural product "drop-out" — That is, certain products in the line today will, due to the changing requirements of all industry, not be in demand in the future and will accordingly not be sold.

If the present to future effort ratio is about equivalent to the natural product drop-out, very little expansion in business will result.

If the present to future effort ratio places too much emphasis on future prospects the neglect of immediate steps necessary to keep business going will result in lowered business volume.

From time to time the men in a development department feel that much greater utility could be made of the results of their work, but that the significance of their results is not fully understood. As a development man produces significant results in the natural course of events he makes a report of his findings. The accumulated findings of a development group frequently add up to information about a condition that any single report could not cover.

Such an assembly of data can imply a changed course of industrial action or a need for further research work, or the basis for a new line of products. It is essential that whoever becomes aware of these implications should not think about possibilities but should subject his ideas to the most careful analysis, and reduce them to writing in the most concise terms. Getting a result of more than usual significance carries with it the obligation to get the result into the hands of those who can use it to improve a company's position.

CALENDAR OF EVENTS

Jan. 19-22. Plant Maintenance Conference and Show, Public Auditorium, Cleveland, Ohio.

Jan. 27-29. 26th Annual Convention of Ass'n. of American Soap and Glycerine Producers, Waldorf-Astoria, New York, N.Y.

Mar. 18-21. 17th Annual Convention of the Southern Paint and Varnish Production Club, Buena Vista Hotel, Biloxi, Miss.

Production Club Meetings

Baltimore, 2nd Friday, Belvedere Hotel.

Chicago, 1st Monday, Furniture Mart.

C.D.I.C., 2nd Monday.
Cincinnati — Oct., Dec., Mar., May, Cincinnati Club;
Dayton — Nov., Feb., April, Van Cleve Hotel;
Inianapolis — Sept., Claypoll Hotel;
Columbus — Jan., June, Fort Hayes Hotel.

Cleveland, 3rd Friday, Harvey Restaurant.

Dallas, 2nd Thursday, No Fixed Place.

Detroit, 4th Tuesday, Rackham Building.

Golden Gate, Last Monday, El Jardin Restaurant, San Francisco.

Houston, 2nd Tuesday, Seven Seas Restaurant.

Kansas City, 2nd Thursday, Pickwick Hotel.

Los Angeles, 2nd Wednesday, Scully's Cafe.

Louisville, 3rd Wednesday, Seelbach Hotel.

Montreal, 1st Wednesday, Queen's Hotel.

New England, 3rd Thursday, Puritan Hotel, Boston.

New York, 1st Thursday, Building Trades Employers Assn.

Northwestern, 1st Friday, St. Paul Town and Country Club.

Pacific Northwest, Annual Meetings only.

Philadelphia, 3rd Wednesday, Engineer's Club.

Pittsburgh, 1st Monday, Fort Pitt Hotel.

St. Louis, 2nd Tuesday, Forest Park Hotel.

Southern, Annual Meetings Only.

Toronto, 3rd Monday, Diana Sweets, Ltd.

Western New York, 1st Monday, 40-8 Club, Buffalo.

abstracts

Analyses of Urea Resins

Grad, P. P., Borden Co., Chemical Div., Bainbridge, N. Y. Presented before Div. of Paint, Varnish, and Plastics Chemistry, ACS, at Milwaukee, Mar. 30-April 3, 1952.

Analytical methods, data, and their interpretation are presented from an industrial point of view. Urea-formaldehyde resins are analyzed primarily to aid production control, to supplement and originate research, and to keep abreast of competitive developments. A typical organizational structure is described which originates, carries out, and interprets the analytical work on urea-formaldehyde resins. The analytical aspects of the commonly checked characteristics of urea-formaldehyde resins are discussed. Potentiometric titrations serve to identify buffer systems and act as a fingerprint of competitive resins.

Viscosity measurements of non-Newtonian urea-formaldehyde resins must be taken on special equipment.

The usefulness of urea-formaldehyde solids determination as practiced is questioned. A straight-line relationship of solids versus specific gravity exists. The latter is a more useful indication of solids than the various solids test themselves. Two nonvolatile determinations are suggested. The specific gravity distribution of urea-formaldehyde powders is an important criterion of uniformity. Refractive index data are a good check on the purity of urea-formaldehyde polymers. Free formaldehyde methods are outlined and their validity is discussed. Kjeldahl nitrogen analysis as a control is a useful tool. For detailed urea-formaldehyde analysis, other nitrogen tests must be carried out, among them ammonia nitrogen, amino nitrogen, and nonurea nitrogen. The reaction of urea-formaldehyde resins with benzylamine and with 2,4-dimethylphenol is described. From these reactions the straight-chain hypothesis of most commercial urea-formaldehyde resins seems to be strengthened. A new and reliable method for the determination of urea-formaldehyde ratio is outlined.

Of the interpretive analysis of non-urea-formaldehyde resin additives, the following are discussed: triethanolamine, diethanolamine, sodium, sulfur, and inorganic and organic acids. For the latter the separation by dialysis and ion exchange is presented. A method of fractionating commercial urea-formaldehyde resins by dialysis shows great promise as an industrial analytical tool The detection and identification of some fillers also are described. A typical analysis of a urea-formaldehyde resin adhesive is presented, together with an interpretive conclusion as to the resin's probable method of manufacture.

Resin Forming Reactions of Furfural and Phenol

Brown, Lloyd, H., The Quaker Oats Co., Chicago 54, Ill. Presented before Div. of Paint, Varnish, and Plastics Chemistry, ACS, at Milwaukee, Mar. 30-April 3. 1952.

Reaction conditions for furfural and phenol are described which produce most of the familiar types of phenolic resins long made with formaldehyde and phenol — namely, aqueous alkali-soluble adhesives and Novolaks. Here en-

vironment for the slower reacting aldehyde, furfural, is prescribed to produce both one- and two-step phenolic resins as well as some with intermediate properties.

In the presence of water, sodium hydroxide is the preferred catalyst to react furfural and phenol to a one-step resin at reflux temperatures. Decreasing the amount of water present increases the reaction rate. The rate of reaction using 10% sodium hydroxide based on the phenol is appreciably greater than with 5% sodium hydroxide; the rate also increases when raising the ratio of furfural to phenol.

Under relatively anhydrous conditions potassium carbonate is a good catalyst for preparing lump resins which are sufficiently fusible to remove unreacted phenol, but which are not permanently fusible. To make permanently fusible lump resins, alkali metal hydroxides and carbonates are satisfactory catalysts, and a low ratio of furfural to phenol is necessary to react the furfural quantitatively. The lower molecular weight Novolaks are soluble in tung oil; all the Novolaks can be catalyzed to infusibility with acids without additional aldehyde.

Polymethylols of Phenols

J. H. Freeman, Westinghouse Research Laboratories, East Pittsburgh, Pa. Presented at the Div. of Paint, Varnish and Plastics Chemistry of ACS Meeting on Sept. 15 in Atlantic City, N. J.

The long sought compounds, 2, 6-dimethylolphenol, 2, 4-dimethylolphenol, and 2,4,6-trimethylolphenol, have been synthesized in good yield by means of reduction of corresponding acetoxyphenyl esters with lithium aluminum hydride in either solution. The polymethylols of phenol are crystalline compounds of sharp melting point and are easily soluble in aqueous media; 2,6-dimethylolphenol is dimorphic.

These respective polymethylolphenols are of considerable importance to the theory of phenolic resin formation, because they may serve readily as cross-linking agents. Inability to obtain pure samples of these compounds has been a considerable handicap in past studies of this reaction.

Evaluation of Adhesion of Coatings by Ultracentrifuge

A. M. Malloy, W. Soller, A. G. Roberts, National Bureau of Standards, Washington, D. C. Presented at the Div. of Paint, Varnish and Plastics Chemistry of the ACS on Sept. 15, 1952 in Atlantic City, N. J.

The design and operation of a new instrument, the University of Cincinnati ultracentrifugal adhesion tester, are described. The principles of operation of the Interchemical adherometer and the Arco microknife are reviewed, and theoretical and practical limitations of these instruments are discussed. The A.S.T.M. tensile adhesion test method is briefly considered. Adhesion data with the four methods are reported for a number of organic coating materials on steel and aluminum.

The ultracentrifugal adhesion tester can produce a true adhesion failure at the coating-substrate interface. Tests with the adherometer and ultracentrifugal adhesion tester do not correlate well. The adherometer data show a negative correlation between the adhesion and "plastic resistance" components of the stripping force. Microknife values depend on other factors in adhesion. The A.S.T.M. method fails to test the material as a coating.

Cellulose Acetate Butyrate Lacquers

W. M. Gearhart and F. M. Ball, Tennessee Eastman Co., Div. of Eastman Kodak Co., Kingsport, Tenn. Presented at the Div. of Paint, Varnish and Plastics Chemistry of ACS Meeting on Sept. 15, 1952 in Atlantic City, N.J.

Wood finishes based on cellulose acetate butyrate should be made using EAB-381. The properties of this ester are given along with data on solubility, compatibility, and formulating principles. The effect of the addition of the various plasticizer and resin additives is correlated with such properties as hardness, adhesion, tensile strength, elongation, and weathering.

Formulas are given for primers, sealers, and finishes, the latter for spray, dip, or brush application. Such finishes are unique in their low flammability, good flexibility, and toughness and their ability to withstand weathering well.

Finishes based upon cellulose acetate butyrate and cellulose nitrate are shown in which the former aids greatly in preventing yellowing and reducing cracking on exterior exposure. It upgrades cellulose nitrate in these respects with little sacrifice in tensile strength, some improvement in elongation, and little change in hardness.

Preparation of Emulsion Polymers for Paint Use

H. Naidus, American Polymer Corp., Peabody, Mass. Presented at Div. of Paint, Varnish and Plastics Chemistry of ACS Meeting on Sept. 16, 1952 in Atlantic City, N. J.

The fundamental principles of polymerization and the role of such emulsion polymerization variables as pH, agitation, and recipe ingredients are discussed.

It is shown that such variables as the copolymer composition and the emulsifying system have a profound effect upon the properties of the ultimate paint. The copolymer determines such properties as pigment binding, adhesion, gloss, compatibility with other resins, water resistance, and aging characteristics. The emulsifying system, in addition to influencing these properties, is the major factor in the control of the chemical stability, mechanical stability, and viscosity of the emulsion.

At best, the preparation of suitable emulsions for paint use involves the proper balance of a large number of factors, which results in a compromise in which many desirable paint characteristics may be sacrificed.

Dissociation Constants of Phenols and Methylol Phenols

G. R. Sprengling, C. W. Lewis, Westinghouse Electric Corp., East Pittsburgh, Pa. Presented at the Div. of Paint, Varnish and Plastics Chemistry of ACS Meeting on Sept. 15, 1952 in Atlantic City, N. J.

The acidities of phenol and of all the methylol derivatives of phenol as well as of further, methyl and methylol substituted, phenols have been measured. The ultraviolet spectroscopic method employed allows measurements of acidity to be made at extreme dilutions. The relative values of pH thus obtained are estimated to be accurate within ± 0.03. A calculated correction to obtain the thermodynamic values is given. Since its resonance stabilization is greater, the anion of a phenol is expected to be more reactive toward electrophilic attack than is undissociated phenol. In the buffered, alkaline solutions usual in phenolic resin production, the more acid phenols will ionize more and thus be more reactive. A discussion of the relative reactivities of some derivatives of phenol is given on this basis.

Oil-Soluble Phenolics

S. Robbin, R. H. Runk, Westinghouse Research Laboratories, East Pittsburgh, Pa. Presented before the Div. of Paint, Varnish and Plastics Chemistry of ACS Meeting on Sept. 15, 1952 in Atlantic City, N. J.

This investigation covers the development of commercially practical, oil-soluble phenol aldehyde resins suitable for the preparation of surface coating varnishes. Such varnishes must exhibit ease of control and moderate thermal polymerization during cooking, excellent air-drying properties, and flexible, durable air-dried films.

The properties of acid and alkaline catalyzed unmodified *p-tert*-butyl phenol resins were investigated, but it was found necessary to employ, 2, 2-bis (4-hydroxyphenyl) propane as a highly functional modifier for these resins before satisfactory heat bodying and air-drying properties were obtained.

Satisfactory resins were made with either oxalic or sulfuric acid as the catalyst, although use of the former is preferred because resins made with it are more easily controlled and have a lighter color. However, when using oxalic acid as the catalyst, it was found necessary to terminate the vacuum dehydration below 80°C. to avoid loss of the volatile acid, with resulting poor properties in the resin.

PAINT BONDING

(*From Page 27*)

pre-treatment and an organic coating of 1.32 — 1.50 mil. or about twice the thickness of the coating in Figure 11. Here the Group D panel failed after 765 hours while the panels of Group A, B and C showed comparable results up to around 1900 hours exposure. They failed after 2000 hours.

B. The Tests with Gilsonite Coatings: Much quicker failures occur in using the Gilsonite test coatings suggested by R. J. Wirshing and W. D. McMaster (4). This material was prepared with 200 parts Gilsonite asphalt, 20 parts rosin, 190 bodied, Z-2 linseed oil, 400 parts xylene and 14 parts iron naphthenate with 72% solids and with 6% iron. The pre-treated and coated panels were exposed in the salt-fog chamber and electrographic prints were made at stated intervals. Here the adhesion was very poor and after 240 hours salt-fog exposure parts of the coating adhered to the photographic paper. When the asphalt was carefully removed from the paper the prints showed very interesting records of the spreading of moisture under the asphalt film from the test-cross. This is shown in Figures 15 and 16. The prints of Figure 15 showing the results with a thin asphalt coating (0.64 — 0.80) are especially of interest insofar as here the panel of Group A with the most uniform pre-treatment profile shows less spreading of moisture than those pretreatments which showed partially flat profile areas in Figures 4-6. In Figure 16 the panel of Group D shows this very clearly also under the very heavy asphalt coating (3.70 mil.). Figure 17 also shows very clearly the underfilm spreading of moisture.

Remarks

One of the points which will have to be studied further is the chemical reason for the wide variations in paint-bonding qualities as shown, for instance, in the pre-treatment of Group A and D, in spite of their similar classification as iron phosphates. One of the factors which has been suggested is the testing of the uniformity of the phosphate coating film. Another point now being studied is the difference in the percent of water-solubility of the applied pre-treatment. Since one of the physical reasons for the success of the phosphate coatings lays in the delay of the formation of water-soluble iron substance in the electrolytic systems as might prevail in the practice of corrosion protection of coated systems, this factor of the water-solubility of the various coating films appears to be of great interest. It is likely that these compounds might or might not contain additional components which form complex compounds of different structure and solubility. It is hoped that this and additional factors may be reported at a later occasion.

Summary

Methods have been shown for comparing the paint-bonding characteristics of phosphate pre-treatments for four representative types in their stripping weight, their profile and their actual paint-bonding effect under long time salt-fog exposure and electrographic printing tests. In correlating the results, quite similar paint-bonding effects were observed under the test conditions between the pre-treatments of Group A, B and C although they differed considerably in their stripping weight and chemical composition. Additional paint-bonding evaluations will include tests on the impact strength and bending resistance in the course of the exposure life of the coating systems having different forms of pre-treatments.

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(3) Kronstein, M., Ward, M. M., and Roper, R., Ind. & Eng. Chem., Vol. 42, p. 1568 (August 1950).
(4) Wirshing, R. J., and McMaster, W. D., Paint and Varnish Production, Vol. 41, No. 9 (1951) p. 13.
(5) Kronstein, M., Paint & Varnish Production, Vol. 41. No. 9 (1951) p. 19.

PPG NEW PLANT

(*From page 31*)

Color Dynamics Used

An ultra-modern unit in all respects, all working areas throughout the plant and office buildings are painted according to the Pittsburgh Principles of Color Dynamics for Industry. The physiological and psychological factors of color energy are utilized scientifically to promote attractive surroundings which provide maximum efficiency as well as pleasant working conditions.

Light-directing prismatic glass blocks are used in the upper portions of the office window areas with steel sash vision strips below. This arrangement provides for an even distribution of natural non-glare daylighting across the rooms without the use of shades or blinds and allows control of direct outside ventilation from the sash in the lower part of the window framing. Solex heat-absorbing glass is used throughout the factory buildings.

Interior artificial lighting is provided by continuous rows of ceiling mounted fluorescent fixtures of an average intensity of fifty foot candles. Submerged under-floor ducts are provided for telephonic and electrical connections throughout the building.

In addition to cheerful, daylighted working conditions employees will benefit by the up-to-the-minute mechanization of the plant which reduces actual physical labor to a minimum. Roller-bearing conveyor lines, new features which add safety factors and versatility to electric fork and platform trucks, hydraulic lifts, and an automatic filler line which loads, seals and labels containers of various sizes all serve to lift the load from the workman's back.

Pittsburgh Plate's new East Point operation will be under the management of John F. Green, who was formerly manager, Trade Sales Service, at the firm's Milwaukee paint factory.

Robert & Company Associates of Atlanta were architects. Preliminary design was by Pittsburgh Plate Glass Company Paint Division design specialists under the supervision of Percy E. Knudsen. Ira H. Hardin, Atlanta, was the general contractor.

Pittsburgh Plate Glass Company, also operates paint and varnish manufacturing plants at Detroit; Houston; Dayton; Milwaukee; Newark; Pittsburgh; Portland, Oregon; Springdale, Pennsylvania; Torrance, California; and four sibsidiary plants in Canada.

•

American Mineral Spirits Honors Its First Quarter-Century Employee

The American Mineral Spirits Company, Chicago had its first quarter-century employee on October 31st.

On that date Mrs. Genevieve Phillips, secretary to the company's chairman, completed her twenty-fifth year with the firm.

Mrs. Phillips was honored by company officials and associates at a dinner at which A. W. Vallentyne, Amsco Chairman, presented her with a commemorative watch.

TECHNICAL Bulletins

HELIOGENS COLORS

Properties, uses and information on the powder brands, paste and presscake brands, water-dispersible powder brands and water-dispersible paste brands of Heliogen colors are described in brochure. The Heliogens are for use in enamels, flushing in oils, lakes, paints and lacquers, paper, printing inks, plastics, rubber, etc. General Dyestuff Corp., 435 Hudson St., New York 14, N. Y.

HANDLING EQUIPMENT

The Caster and Floor Truck Manufacturers' Association, made up of the principle manufacturers of industrial wheels, casters, hand and floor trucks and other basic materials handling equipment, have just announced publication of "Handbook of Manual Materials Handling Equipment." This handbook is designed to acquaint both industry and the layman with the terminology and basic fundamentals of casters, wheels, hand and floor trucks, pallets and skids. According to The Association, anyone reading the handbook can accumulate an intelligent working knowledge of all types of manual materials handling equipment, and by applying the principles outlined in the text, industries and institutions, warehouses, stores and other commercial establishments as well as government agencies can effect considerable cost savings in the movement of materials. Price is $1.00. Caster and Floor Truck Manufacturers' Assoc., 27 East Monroe St., Chicago 3, Ill.

HEXAHYDRO PHTHALIC ANHYDRIDE

Four page folder discusses the physical and chemical properties, suggested uses, hazards, physiological action, and availability of this chemical. National Aniline Div., Allied Chemical & Dye Corp., 40 Rector St., New York 6, N. Y.

PLATY MICA IN VINYLS

Technical Bulletin No. 10 issued by the Wet Ground Mica Association, Inc., 420 Lexington Ave., is a report of the use of platy mica extender in vinyl-alkyd paints. Paints used (formulations), application of paints, evaluation of tests and results are given in the report.

INDUSTRIAL CHEMICALS

An important addition to the 1953 catalog is the inclusion of those chemicals produced in whole or in part by Texas Eastman Company, Eastman Kodak Company's new chemical manufacturing division in Longview, Texas. Among those products resulting from the activities of the Texas division are n-butyric anhydride, isobutyraldehyde, isobutyl alcohol, isobutyl acetate, 3-methoxybutyl alcohol, 3-methoxybutyl acetate and diisobutyl phthalate.

The 1953 catalog contains specifications, properties and typical uses of some 54 of the company's industrial chemicals and lists the various fields in which each compound finds its greatest use.

Copies of the new edition are available upon request to the Chemical Sales Division, Tennessee Eastman Company, Kingsport, Tennessee.

FORK TRUCK MANUAL

Titled, "How To Operate A Lift Truck", this 24-page booklet was prepared and published in the interests of safe and efficient lift truck operation.

Combining a 2-color cartoon technique with a detailed manual approach, the book contains information not only about the operation of a lift truck, but also preventive maintenance, safety and basic materials handling. Drawings for setting up an obstacle course are also included. Hyster Co., 2902 N.E. Clackamas St., Portland 8, Oregon.

PLASTICS & SYNTHETIC RUBBER BULLETIN

72-page bulletin contains abstracts of new research developments on plastics, resins and elastomers taking place in Germany. Bulletin contains 7 sections. Section I is devoted to silicones and related materials. Section II pertains to vinyl and ethylene compounds, Section III is concerned with the process for producing oil-modified polystyrene resins and styrene copolymers. Section IV dealing with elastomers is highlighted by a report which proposes new fillers for silicone rubber. Cellulose and cellulose derivatives is the subject of Section V. Section VI contains the latest on acrylics, phenolics and polyesters. Miscellaneous processes are included in the last section. Research Information Service, 53 Nassau St., New York 38, N. Y.

PHOSPHATE CHEMICALS

Twelve-page folder describes the entire company's line of phosphate coating chemicals for paint-bonding, rust-proofing, protecting friction surfaces and improving cold forming. American Chemical Paint Co., Ambler, Pa.

DEHYDRATORS

The continuous removal of water vapor from air and other gases, to dew points as low as —100°F, is described in a new bulletin pertaining to dehydration equipment. "Selas Dehydrators," a 12-page bulletin, describes the needs for dehydration and the extent to which gas or air can be dried, practicably, together with the operation of specified equipment.

Three series of dehydrators are fully specified as to capacities and physical dimensions. A nomograph is provided for preliminary determinations of appropriate equipment. A separate data sheet with spaces for more specific operating information is included for mailing to the manufacturer so that more precise equipment recommendations can be made. This bulletin is available upon request to Selas Corporation of America, Philadelphia 34, Pennsylvania.

KROMA REDS

Folder presents technical information on Kroma Reds which include chemical and physical properties, particle size distribution, and color data. Kroma Reds are a new type of iron oxide pigment. They are a precipitated product and, unlike other commercial red oxides, are not subjected to calcination. C. K. Williams & Co. (Offices in Easton, Pa., East St. Louis, Ill., and Emeryville, Calif.).

TDI DIMER

Sixteen-page bulletin discusses the chemical and physical properties of TDI dimer (toluene-2, 4-diisocyanate dimer). Chemical reactions are given in detail together with the various uses of this chemical in adhesives, elastomers, films, plastics, and other miscellaneous products. Patents resumes are included. E. I. du Pont de Nemours & Co., Organic Chemicals Dept., Box 525, Wilmington, Del.

TACHOMETER

Bulletin describes full line of recording and indicating electric tachometers. The instruments described include models for measuring speed of rotation or travel, processing time, speed ratios, sum or difference of speeds, and average of speeds. Featured in the bulletin are the recently-announced electronic Dynamaster Recording Tachometers. Engineering information and complete specifications on magnetos and the various types of magneto drives are given. The Bristol Co., Waterbury 20, Conn.

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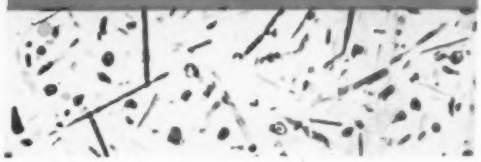
high

AZO ZZZ-22

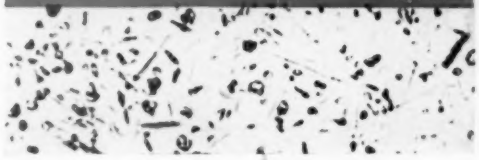
A high oil absorption Zinc Oxide having large Acicular Particles which gives heavy body



medium

AZO ZZZ-11

A medium oil absorption Acicular Zinc Oxide imparting exceptional weathering qualities to exterior paints



AZO acicular lead-free zinc oxide is a superior pigment available in a wide range of oil absorptions

low

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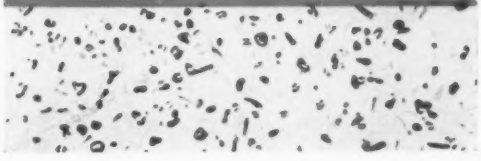
A definitely Acicular type with a lower oil absorption, but chemically identical with AZO ZZZ-11 and AZO ZZZ-22



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